

Streetscape Manual

INTERAGENCY INITIATIVE FOR
NATIONAL MALL ROAD IMPROVEMENT PROGRAM

ARCHITECTURAL AND ENGINEERING STANDARDS SUBGROUP

AUGUST 1992

(UPDATED MARCH 2013)

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INTERAGENCY INITIATIVE FOR NATIONAL MALL ROAD IMPROVEMENT PROGRAM

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MARCH 2013

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Streetscape Manual

INTERAGENCY INITIATIVE FOR NATIONAL MALL ROAD IMPROVEMENT PROGRAM

DESCRIPTION OF PURPOSE AND CONTENT

PURPOSE

The streetscape serves as a unifying and visually enhancing element of the historic design of our Nation's Capital. The purpose of this manual is to provide guidelines for a coordinated and consistent streetscape treatment for roadways in the central area of the city in the vicinity of the National Mall. Although the Manual was prepared as part of a coordinated effort among Federal and District of Columbia agencies to implement the current road improvement initiative, it is applicable beyond the initial program. The Manual does not supersede officially adopted plans and policies established for the area but will assist in guiding the implementation of the plans. It deals with the areas fronting on roadways and pedestrian ways considered part of the street scene.

The Manual will be used by Federal and District of Columbia agencies and their contractors in the rehabilitation or reconstruction of roadways in the area extending generally from Pennsylvania Avenue and E Street, NW, including President's Park on the north, the Potomac River and the Southwest Freeway on the west and south, and Second Street on the east. The rehabilitation and reconstruction includes all property under the jurisdiction of the Architect of the Capitol, as shown on Map 1. There is an interest in implementing evolving technologies that are appropriately dignified and visually enhance the character of the Mall while sustaining valuable natural resources.

MANUAL CONTENTS

CONCEPT AND CLASSIFICATIONS.

The Manual begins with a description of the overall concept and a classification system for roadways in the vicinity of the National Mall. This description provides guidance for determining the design treatment of these roadways in accordance with their function and purpose. Maps are included that depict the classification system and the roadways included in each classification.

STREETSCAPE ELEMENTS.

A matrix outlining the streetscape elements proposed for each class of roadway is included in the second section of the Manual. An illustration of each element is provided. Also included is a map that shows the suggested street light standards in the vicinity of the National Mall.

SPECIAL CONSIDERATIONS.

Presidents Park is now completed, but was originally part of the proposed plan for the National Mall. This section also addresses vendor policies and major building entrances.

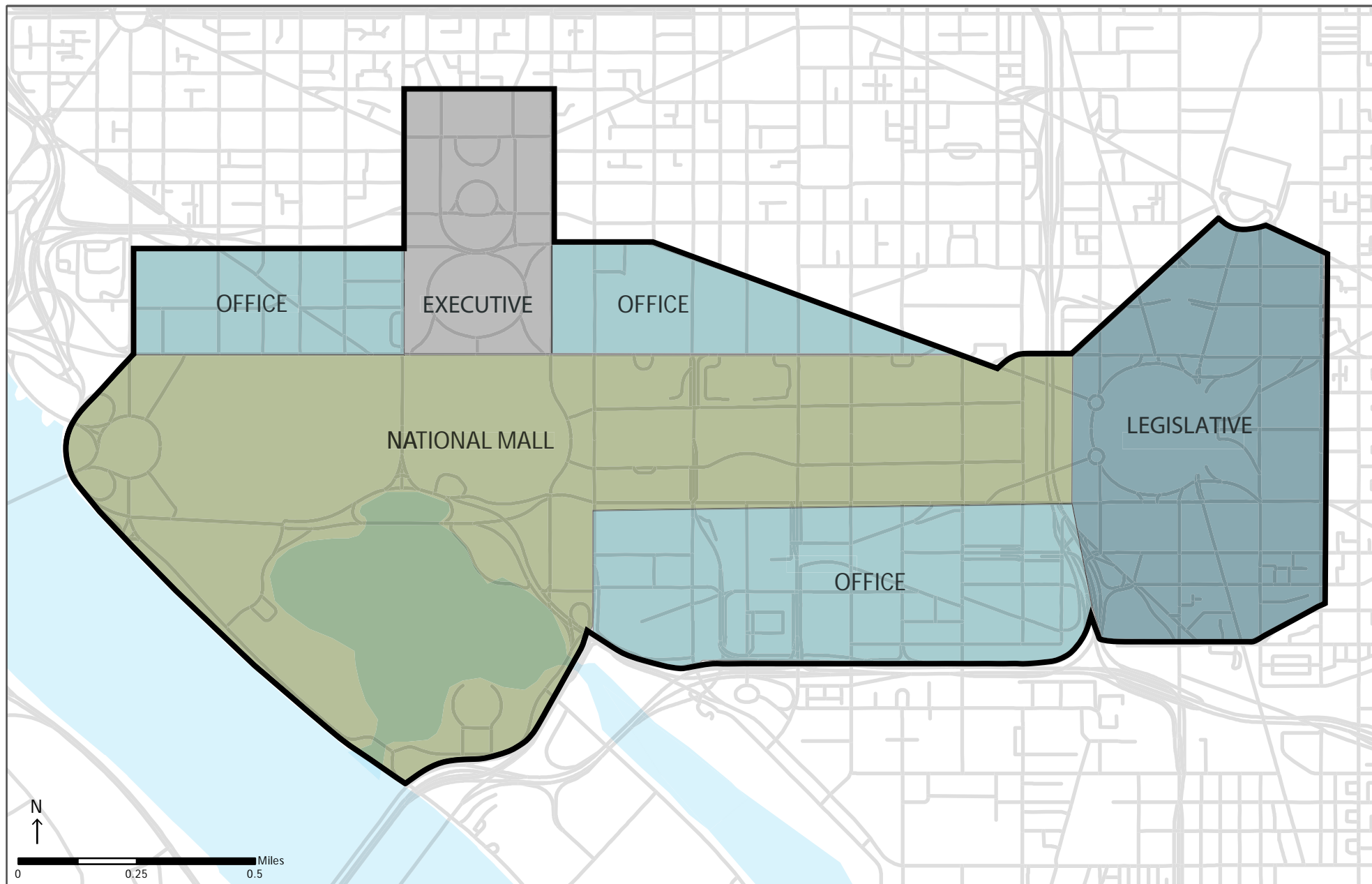
DETAILS AND SPECIFICATIONS

Details and specifications for each streetscape element are included for use in preparing construction documents for roadway improvement projects.

APPENDIX

HISTORICAL DOCUMENTS

Memorandum of Agreement (1992); National Capital Planning Commission Approval; Commission of Fine Arts Approval; Smithsonian endorsement letter; Project Completion History; Roadway Jurisdiction Map; Original Architectural and Engineering Standards Subgroup Members



MAP 1: PRECINCT FUNCTIONS

Concept and Classifications

CONCEPT AND CLASSIFICATIONS

CONCEPT

The streetscape quality and character of roadways in the Mall area should reflect the function each roadway performs. As shown on Map 1, precincts are identified by the predominant activities conducted within them. Major roadways serve as boundaries for these precincts, as well as define them and provide access to them. Roadways within the precincts serve the activities conducted there.

CLASSIFICATIONS

Map 2 establishes a classification of roadways consistent with their function. The streetscape treatments that will be applied to each class of roadway are described in detail in the next section. Five classes have been established.

1. MAJOR STREETS, AVENUES, AND GATEWAYS.

These roadways generally serve as precinct boundaries, are heavily used for access and traffic circulation within the city, and, in most instances, are gateways to the area used by visitors. The streetscape character of these roadways should be of the highest quality.

2. MAJOR PARK ROADS.

These roadways are extensions of major streets and avenues through park areas and require special treatment reflecting the same character and quality as the major avenues.

3. PARK ROADS AND DRIVES.

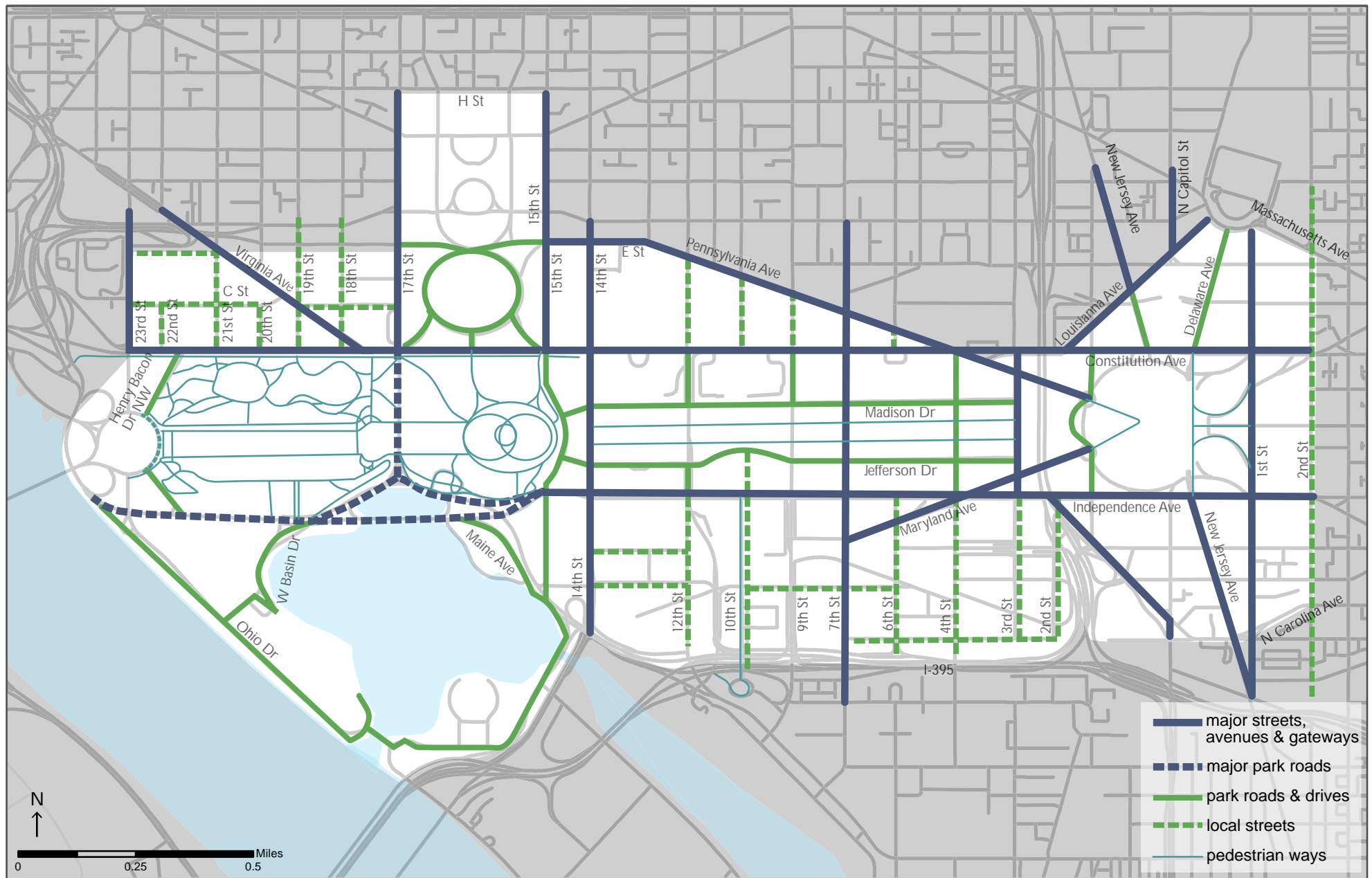
These roadways provide direct access to the open spaces, parks, monuments, memorials, and museums in the area. The character of the streetscape should generally reflect park-like qualities and landscaping related to the surroundings.

4. LOCAL STREETS.

Local streets are generally located in offices areas and provide direct access to the surrounding buildings. The streetscape character should reflect the utilitarian nature of the area, creating a pleasant working environment of high quality.

5. SPECIAL PEDESTRIAN WAYS

Special pedestrian ways are generally located in the Mall area, extending from the Capitol to the Lincoln Memorial and including the Washington Monument, the Jefferson Memorial, and President's Park. The streetscape should provide all the amenities necessary for the comfort and convenience of pedestrian visitors in a highly attractive environment.



MAP 2: ROADWAY TREATMENT CLASSIFICATIONS MAP

STREETSCAPE MANUAL —INTERAGENCY INITIATIVE FOR NATIONAL MALL ROAD IMPROVEMENT PROGRAM

Streetscape Elements

STREETSCAPE ELEMENTS

For the purposes of this Manual, the streetscape elements include the roadways, curbs with or without gutters, step-out curb borders, street lighting, planting borders or grated plantings, sidewalks with or without lawn curbs behind the sidewalk, alleys behind the sidewalks (where appropriate), trash receptacles, benches, drinking fountains (where appropriate), fire hydrants, posts and chains, and other street hardware. These elements are generally located in areas fronting roadways and pedestrian ways as part of the street scene.

The contents of the Streetscape Elements and Design Treatment Matrix on page eight are organized by roadway and pedestrian way classification categories. Design treatments correspond to those categories. The guidelines are developed so that designers can easily select appropriate elements for each project. Each element is illustrated in the following pages.

At the end of this section, Map 3 shows the street lighting scheme for the area. The Twin-Twenty light standard will be placed on all major streets. The Washington Globe #16 light standard will be used on the park roads and local streets. The light standard developed by Frederick Law Olmsted will be used along the Mall pedestrian ways and drives between 14th Street and the Capitol. The Washington Globe 14N light standard will be used on the Washington Monument Grounds, around the Reflecting Pool at the Lincoln Memorial, and along pedestrian ways at other memorials. The light source for the special pedestrian ways will be metal halide, incandescent, or white LED fixtures (where possible). Map 3 shows the distribution of these lights.

Effective and attractive signs are of great importance for the millions of visitors and tourists who come to the Mall area. Comprehensive NPS Mall and Smithsonian sign programs have been developed, and now provide vital information and directional guidance. The National Mall Wayfinding and Pedestrian Guides, and the Smithsonian Wayfinding Design Guidelines are available in the respective websites of these agencies.

The American Elm trees specified in the historic McMillan Plan for the Mall at the turn of the century are symbolic of the American adaptation of the classic mall design. They have become one of the Mall's most significant features, forming the arched canopies that shade the pedestrian ways. In addition to the Elm trees lining the Mall, the streetscape guidelines call for the use of disease-resistant (DED) American Elm trees along the major streets and avenues and park roads. Currently, there are street trees, which do not conform to guidelines, along the major streets and park roads. As these trees die, they will be replaced with DED American Elms. To add variety to the overall streetscape in the area, local authorities will select a variety of different tree species to line the local streets.

STREETSCAPE ELEMENTS AND DESIGN TREATMENT MATRIX

| ELEMENTS | Detail Ref. | STREET CLASSIFICATION AND TREATMENT | | | |
|--|-------------|---|-----------------------|--|--|
| | | Major Streets and Roads | Park Roads and Drives | Local Streets | Special Pedestrian Ways |
| Road surface (asphaltic concrete) | A B | D.C. Standard NPS Standard | NPS Standard | D.C. Standard | Not applicable |
| Gutters | C | NPS/D.C. Standard as appropriate | NPS Standard | D.C. Standard | |
| | | Granite | | | |
| Curb | D E | D.C. 8" x 12" to 14 NPS 6" x 16" | NPS 6" x 16" | D.C. 8" x 12" to 14" | |
| Sidewalks (score per existing pattern) Joint spaced to match sidewalk width | F | Exposed aggregate concrete | | D.C. Standard except for special areas | Loose gravel or exposed aggregate concrete |
| Step-out curb borders behind (meters face toward street) | G | Exposed aggregate concrete | | | Not applicable |
| | | Variable width curb | 24" wide | | |
| Bus stop areas (adjoining sidewalk) | H | Exposed aggregate concrete | | | |
| Bus pads (in street) | | Blackened concrete | | D.C. Standard | |
| Wheelchair ramps | J | Granite, 6-foot opening preferred | | | |
| Trash receptacles | K, L | NPS-type (K) | | Modified PADC (L) | |
| Recycling receptacles | M, N | NPS-type (M) | | Modified PADC (N) | |
| Lighting –Color (pole) –Shape (globe) | O P Q | Black and Olmsted only, dark brown | | Dark gray or black | Black and Olmsted only, dark brown |
| | | Twin-Twenty Globe | Washington Globe | | 14N Wash Globe |
| | | | O lmsted (Mall) | | O lmsted (Mall) |
| | | | 20 feet | 16 feet | |
| –Approximate height –Type | | Metal halide (Alternative: lamp with refractors or LED luminaires) | | | Incandescent |
| Benches | R, S | Metal/wood NPS armless bench; Metal/wood bench with arms | | | |
| Drop inlet covers | T | Simulated granite (reinforced concrete) | | | Not applicable |
| Drinking fountains | U | Handicapped accessible | | | |
| Trees -Type -Individual planting -Linear planting -Spacing/area | V W | American Elm–disease resistant | | Tree of choice | American Elm |
| | | Simple square/rectangle for all | | | Not applicable |
| | | 50 feet on center preferred with 64 square feet of planter area (minimum) per tree | | | |
| Lawn curbs behind sidewalk | X | No metal or concrete. Granite consistent with curb or building. Use where required. | | | |
| Street hardware –Fire hydrant –Post and chain | Y Z | Color to match light poles | | | |
| Bike rack | AA BB | NPS Hoop Rack (AA) | | Bike Hitch (BB) | |

Table 1: Streetscape Elements and Design Treatment Matrix

Interagency Initiative for National Mall Road Improvement

STREETSCAPE ELEMENTS

- A. District of Columbia standard asphaltic concrete
- B. National Park Service (FHWA) standard asphaltic concrete
- C. Standard brick gutter
- D. District of Columbia standard granite curb
- E. National Park Service standard granite curb
- F. Exposed aggregate concrete sidewalk
- G. Exposed aggregate concrete step-out curb border

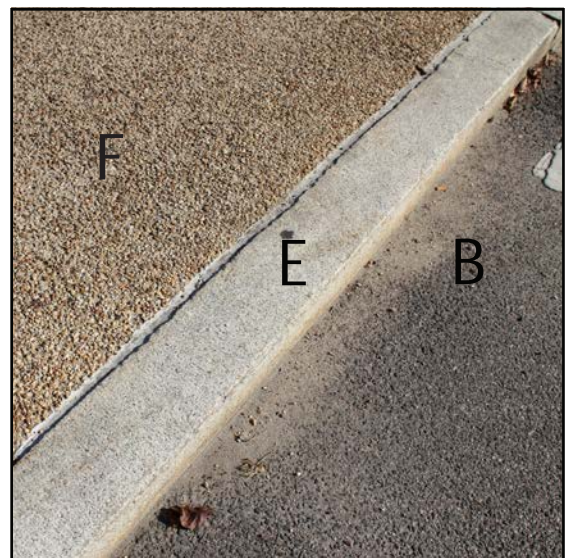
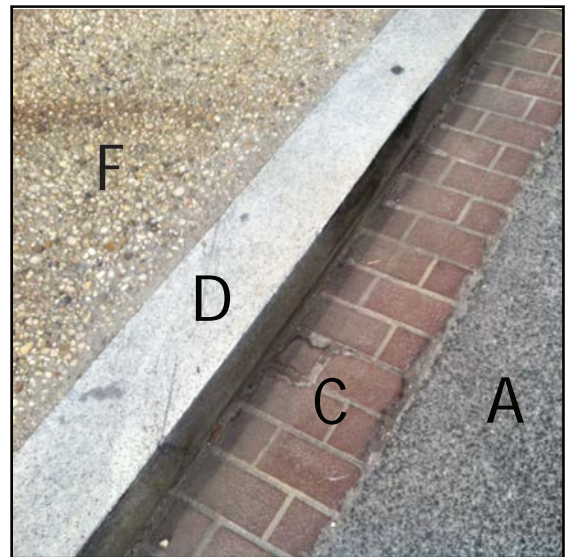


Figure 1: Streetscape Elements

STREETSCAPE ELEMENTS

- F. Exposed aggregate concrete sidewalk
- G. Exposed aggregate concrete step-out curb border
- H. Exposed aggregate concrete bus stop
- I. Blackened concrete bus pad
- Z. Post and chain barrier

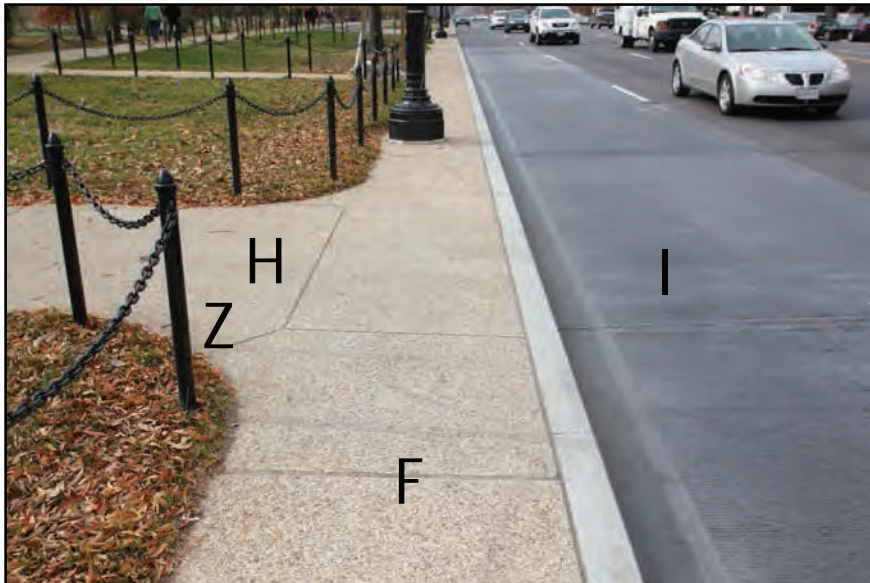
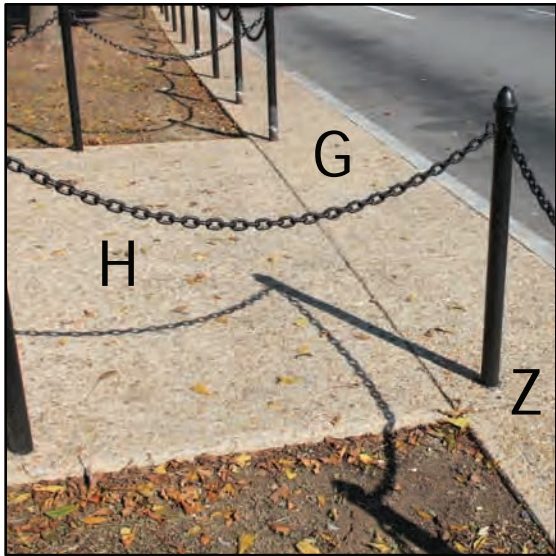


Figure 1: Streetscape Elements

STREETSCAPE ELEMENTS

- F. Exposed aggregate concrete sidewalk
- J. Granite wheelchair ramp
- K. NPS-type trash receptacle
- L. Modified PADC trash receptacle
- M. NPS-type recycling receptacle
- N. Modified PADC recycling receptacle



Figure 1: Streetscape Elements



STREETSCAPE ELEMENTS

- O. Twin-Twenty Globe light standard with metal halide lamps: major streets and major park roads
- P1. Washington Globe #14N with metal halide lamp: pedestrian ways in park areas and at memorials
- P2. Washington Globe #16 with metal halide lamp: park roads and local streets
- Q. Frederick Law Olmsted light standard: pedestrian ways on Mall and along Jefferson and Madison Drives between 3rd and 14th St.



Figure 1: Streetscape Elements

STREETSCAPE ELEMENTS

- F. Exposed aggregate concrete sidewalk
- R. NPS-type armless bench
- S. Bench with arms
- T. Exposed aggregate or simulated granite (pre-cast concrete) inlet cover
- U. Handicapped accessible drinking fountain

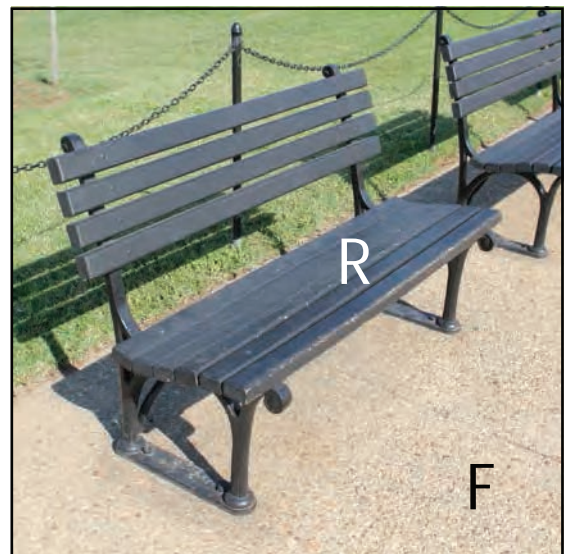


Figure 1: Streetscape Elements

STREETSCAPE ELEMENTS

- F. Exposed aggregate concrete sidewalk
- G. Exposed aggregate concrete step-out curb border
- V. Individual tree replacement (i.e., Federal Triangle planting bed with brick border)
- W. Tree planting in linear tree space, wood mulched

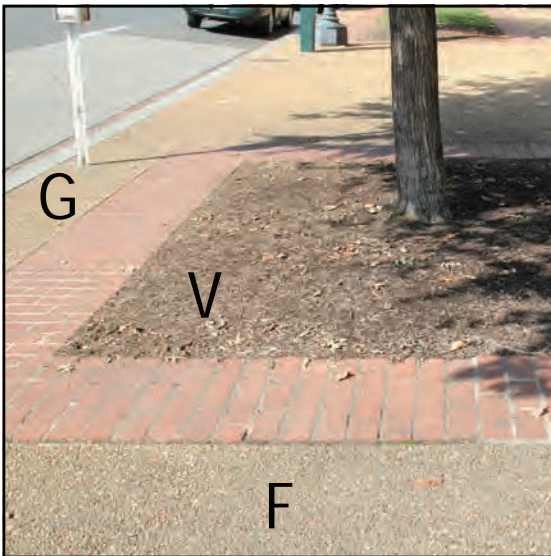


Figure 1: Streetscape Elements

STREETSCAPE ELEMENTS

- E. National Park Service standard granite curb
- F. Exposed aggregate concrete sidewalk
- G. Exposed aggregate concrete step-out curb border
- X. Granite lawn curb
- Y. Fire Hydrant
- Z. Post and chain
- AA. NPS Hoop Rack
- BB. Bike Hitch

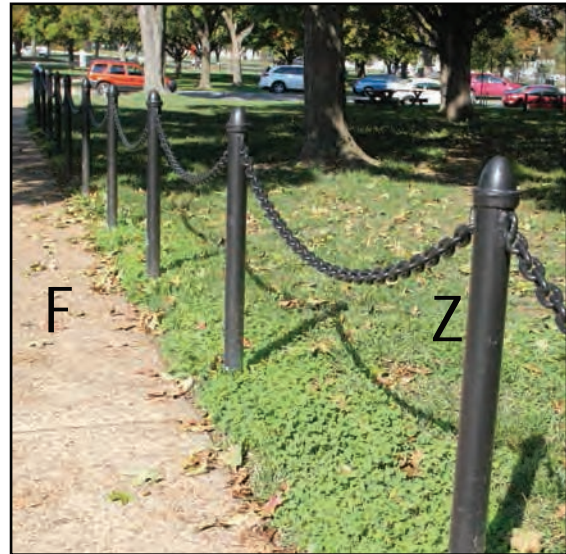
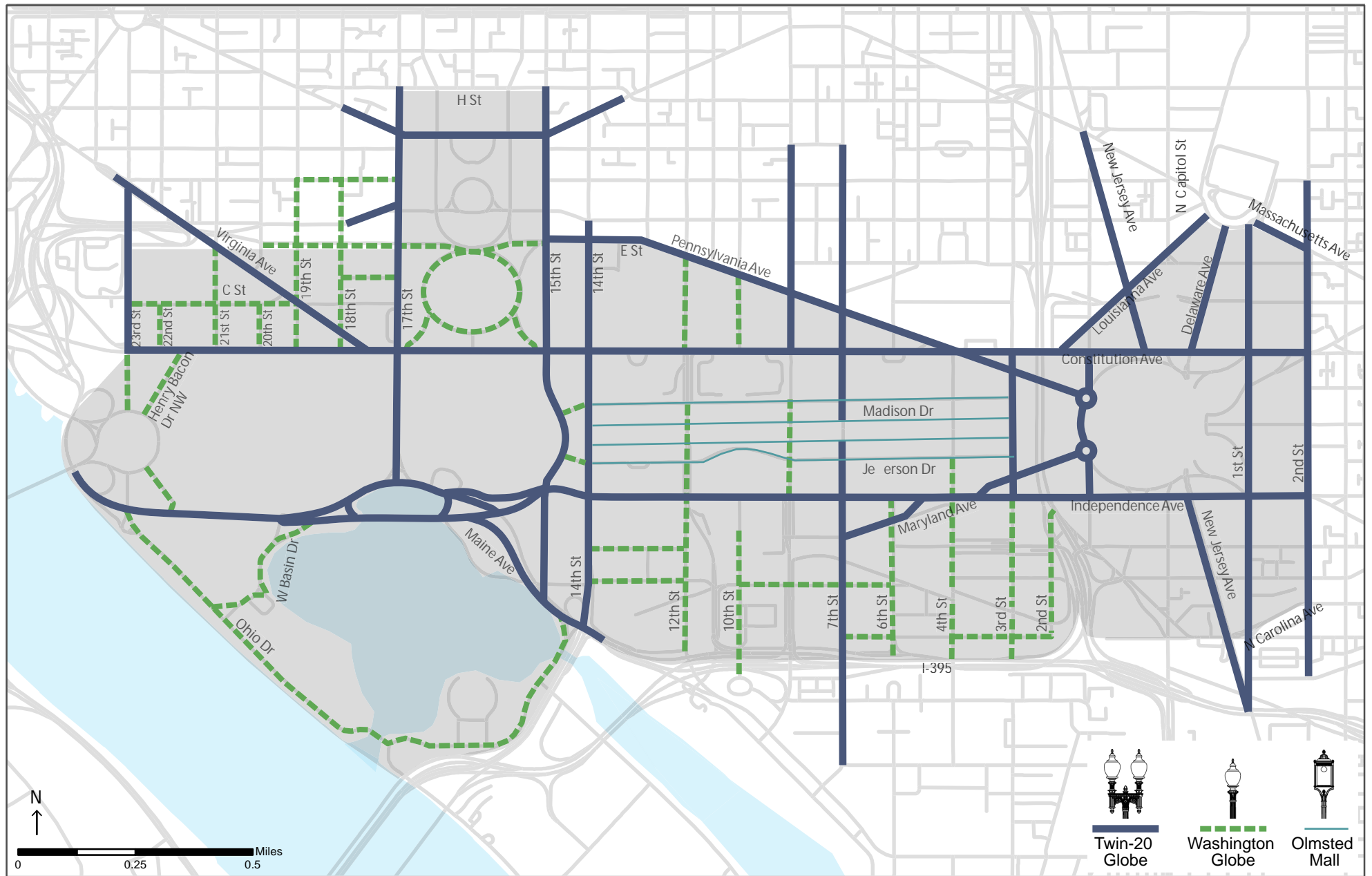


Figure 1: Streetscape Elements



MAP 3: STREET LIGHTING PLAN

Special Considerations

SPECIAL CONSIDERATIONS

PRESIDENT'S PARK

NPS has developed a master plan for President's Park. President's Park, which includes the White House grounds, extends from Lafayette Park and H Street on the north to the Ellipse and Constitution Avenue on the south. Map 5 shows the original map included in the Streetscape Manual. An updated map, to be provided by the NPS, is under development and will replace the current map once the new map is available to the public.

Other Important Plans and Design Guidelines

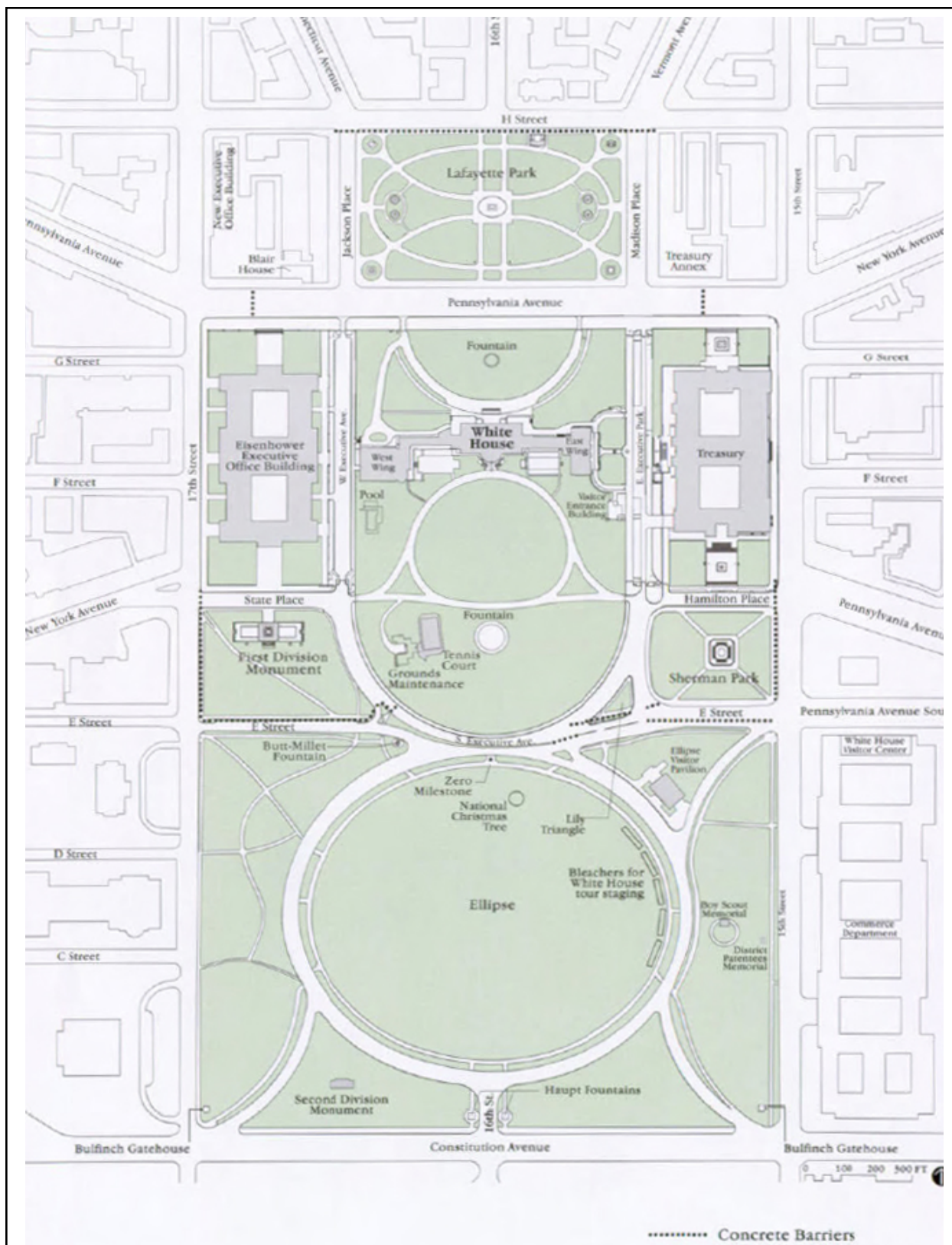
- The White House and President's Park Design Guidelines (December 1997)
- The Comprehensive Design Plan for the White House and President's Park (2000)
- The U.S. Capitol Master Plan (TBD)
- National Park Service Wayfinding and New Pedestrian Guides (October 2011)
- The Smithsonian Mall-wide Exterior Sign Program (May 2002- as amended)
- The District Department of Transportation
 - Downtown Streetscape Regulations (August 2000)
 - DDOT Design and Engineering Manual (April 2009)
 - DDOT Public Realm Design Manual

VENDORS

Vendors in the vicinity of the National Mall are an important ingredient of the street scene. A special subgroup has been assigned to prepare guidelines for the accommodation of vendors in the area. If guidelines are developed they will be incorporated into this section of the Manual upon their completion and approval.

MAJOR BUILDINGS

The main entrances to major buildings such as museums may require special consideration. The design of these entrances facing roadways should follow the guidelines in this Manual to maintain streetscape continuity, while giving consideration to the distinctive architecture, landscape setting, and history of the building. As a result, on a case-by-case basis, some variation in treatment may occur at specific entrance locations along the roadways.



Map 5: President's Park

President's Park Site Plan (Office of the NPS Liaison to the White House, January 10, 2010)

Details and Specifications

DETAILS AND SPECIFICATIONS

The specifications, details, and equipment to be used for road improvements under this program and described in this Manual are intended to comply with the provisions of the Americans With Disabilities Act Accessibility Guidelines and the Uniform Federal Accessibility Guidelines as revised July 24, 2004.

| PAGE | DETAIL REFERENCE | DETAIL AND SPECIFICATIONS |
|------|---------------------|--|
| 23 | A | DISTRICT OF COLUMBIA GOVERNMENT ASPHALTIC CONCRETE |
| 24 | B | NPS (FEDERAL HIGHWAY ADMINISTRATION) ASPHALTIC CONCRETE |
| 26 | C-1 | D.C. BRICK GUTTER DETAIL |
| 27 | C-2 | SPECIFICATIONS |
| 29 | D-1 | D.C. GRANITE CURB DETAIL |
| 30 | D-2 | SPECIFICATIONS |
| 34 | E-1 | NPS GRANITE CURB DETAIL |
| 36 | F-1 | SIDEWALK DETAIL—EXPOSED AGGREGATE CONCRETE |
| 37 | F-2 | SPECIFICATIONS |
| 42 | G-1 | STEP-OUT CURB BORDER DETAIL—EXPOSED AGGREGATE CONCRETE |
| 44 | H-1 | BUS STOP DETAIL—EXPOSED AGGREGATE CONCRETE |
| 46 | I-1 | BUS PAD DETAIL—BLACKENED CONCRETE |
| 47 | I-2 | SPECIFICATIONS |
| 55 | J-1 | GRANITE WHEELCHAIR RAMP DETAILS |
| 57 | K-1 | NPS-TYPE TRASH RECEPTACLE DETAIL |
| 58 | M-1 | NPS-TYPE RECYCLING RECEPTACLE DETAIL |
| 59 | K-2, M-2 | SPECIFICATIONS |
| 60 | L-1 | MODIFIED PAD C TRASH RECEPTACLE DETAIL |
| 61 | N-1 | MODIFIED PAD C RECYCLING RECEPTACLE DETAIL |
| 62 | L-2, N-2 | SPECIFICATIONS |
| 63 | O-1 | TWIN-TWENTY LIGHT STANDARD DETAIL |
| 65 | O-2 | SPECIFICATIONS |
| 73 | P-1 | WASHINGTON GLOBE #16 LIGHT STANDARD DETAIL |
| 74 | P-1 | WASHINGTON GLOBE #14N LIGHT STANDARD DETAIL |
| 75 | Q-1 | FREDERICK LAW OLMSTED LIGHT STANDARD DETAIL |
| 78 | R-1 | NPS ARMLESS BENCH DETAIL |
| 80 | R-2 | SPECIFICATIONS |
| 81 | S-1 | BENCH WITH ARMS DETAIL |
| 82 | S-2 | SPECIFICATIONS |
| 83 | T-1 | STANDARD INLET COVER DETAIL |
| 85 | T-1 | NPS-STANDARD CATCH BASIC (TYPE 1) DETAIL (WITH PAVEMENT) |
| 86 | T-1 | D.C. STANDARD CATCH BASIN DETAIL (WITH GUTTER PAN) |
| 87 | T-2 | SPECIFICATIONS |
| 93 | U-1 | DRINKING FOUNTAIN |
| 95 | U-2 | SPECIFICATIONS |

DETAILS AND SPECIFICATIONS

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| PAGE | DETAIL REFERENCE | DETAIL AND SPECIFICATIONS |
|------|---------------------|---------------------------------------|
| 97 | V-1, W-1 | INDIVIDUAL TREE REPLACEMENT DETAIL |
| 98 | V-2, W-2 | SPECIFICATIONS |
| 117 | Y-1 | FIRE HYDRANT DETAIL |
| 118 | Y-2 | SPECIFICATIONS |
| 122 | Z-1 | POST AND CHAIN BARRIER DETAIL—SECTION |
| 123 | Z-1 | POST AND CHAIN BARRIER DETAIL |
| 124 | Z-2 | SPECIFICATIONS |
| 126 | AA-1 | HOOP BICYCLE RACK DETAIL |
| 127 | AA-2 | SPECIFICATIONS |
| 128 | BB-1 | HITCH BICYCLE RACK DETAIL |
| 129 | BB-2 | SPECIFICATIONS |

A

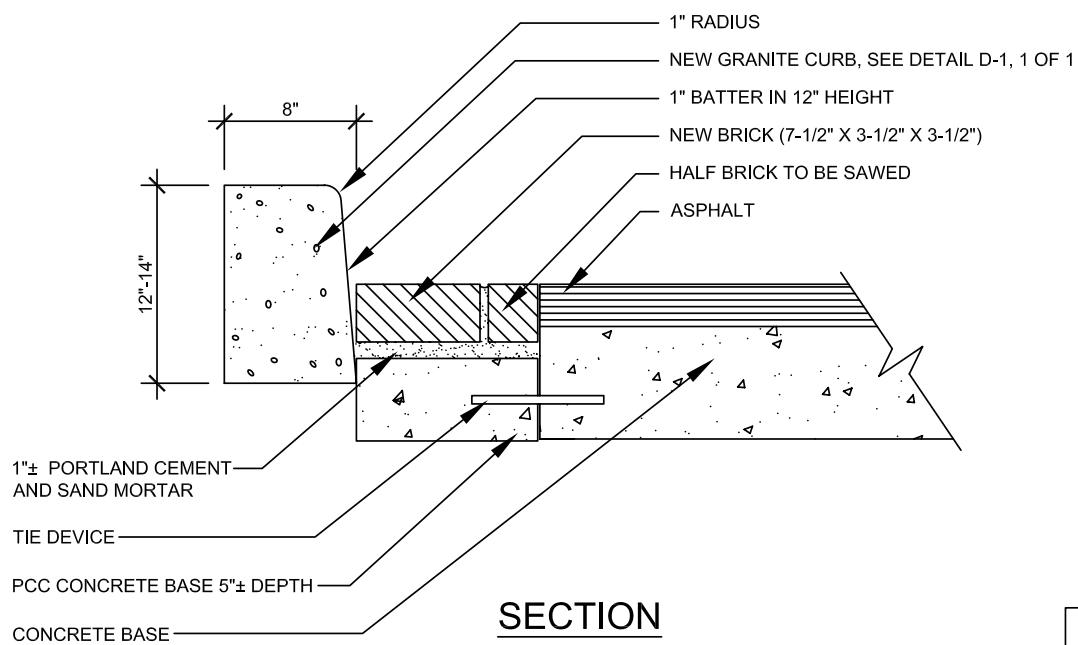
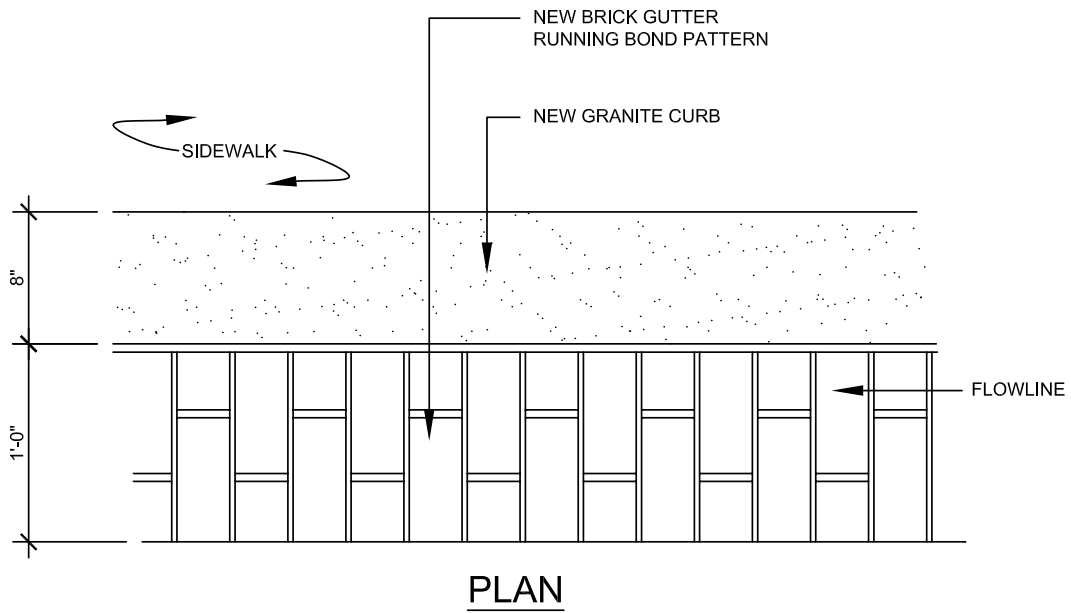
For District of Columbia Government Asphaltic Concrete Specifications, See "Standard Specifications for Highways and Structures, 2009" and "Supplemental Specifications, 2007," for Information on Specific Sections.

B

For National Park Service (Federal Highway Administration)
Asphalt Concrete Specifications, See "Standard Specifications
for Construction of Roads and Bridges on
Federal Highway Projects," FP-03, 2003

C

D.C. Brick Gutter



C-1
1 of 1

Figure 2: D.C. Brick Gutter Detail
Interagency Initiative for National Mall Road Improvement

C-2

D.C. GUTTER SPECIFICATIONS—BRICK

DESCRIPTION

This work consists of furnishing and installing brick pavers on a concrete base for construction of brick gutters.

MATERIAL

Mortar shall consist of one (1) part portland cement and two (2) parts concrete sand thoroughly mixed. Portland cement shall conform to American Association of State Highway and Transportation Officials (AASHTO) M 85. Fine aggregate shall conform to AASHTO M 6, Class B, except that the material passing the No. 200 sieve is limited to 3 percent. Fine aggregates shall have a minimum sand equivalent value of 75 when tested in accordance with AASHTO T 176, Alternate Method No. 2.

Paving brick shall meet the following requirements:

- (1) Brick shall comply with requirements of AASHTO M114, Grade S.W., Size 7 1/2" inches by 3 1/2 inches by 3 1/2 inches.
- (2) Broken, chipped, cracked, warped, or underburned brick will be rejected.
- (3) Brick color to match existing brick used in gutter along D.C. streets.

SUBMITTAL

Submit samples of brick for color range. Color to match other D.C. brick gutters.

CONSTRUCTION REQUIREMENTS

A dry mixture of mortar shall be thoroughly mixed and spread on the concrete base to a depth of not less than 1/2, and not more than 1, inch and regulated to be exactly parallel to the finished grade of the brick when laid. On the bed thus prepared, the brick shall be set on edge with the longest dimension at right angles to the curb line. The bricks must be laid closely together and settled to grade. The entire area shall be sprinkled with water and thoroughly grouted with a thin, easily flowing grout of one (1) part cement and two (2) parts sand. The grouting must be repeated until all joints between the bricks are filled.

At all intersections and sharp turns, expansion joint material shall be installed in the brick gutter. The expansion joints shall be installed at the tangent points and along the arc at one-third (1/3) points on the arc between the tangent points. When expansion joints are installed in the portland cement concrete base, the expansion joint materials shall be the same type as those installed in the brick gutter and shall be installed at the same locations as those in the base. In all cases, however, expansion joint material shall be installed in the brick gutter at the tangent points and/or along the arc at one-third (1/3) points between the tangent points, as specified above.

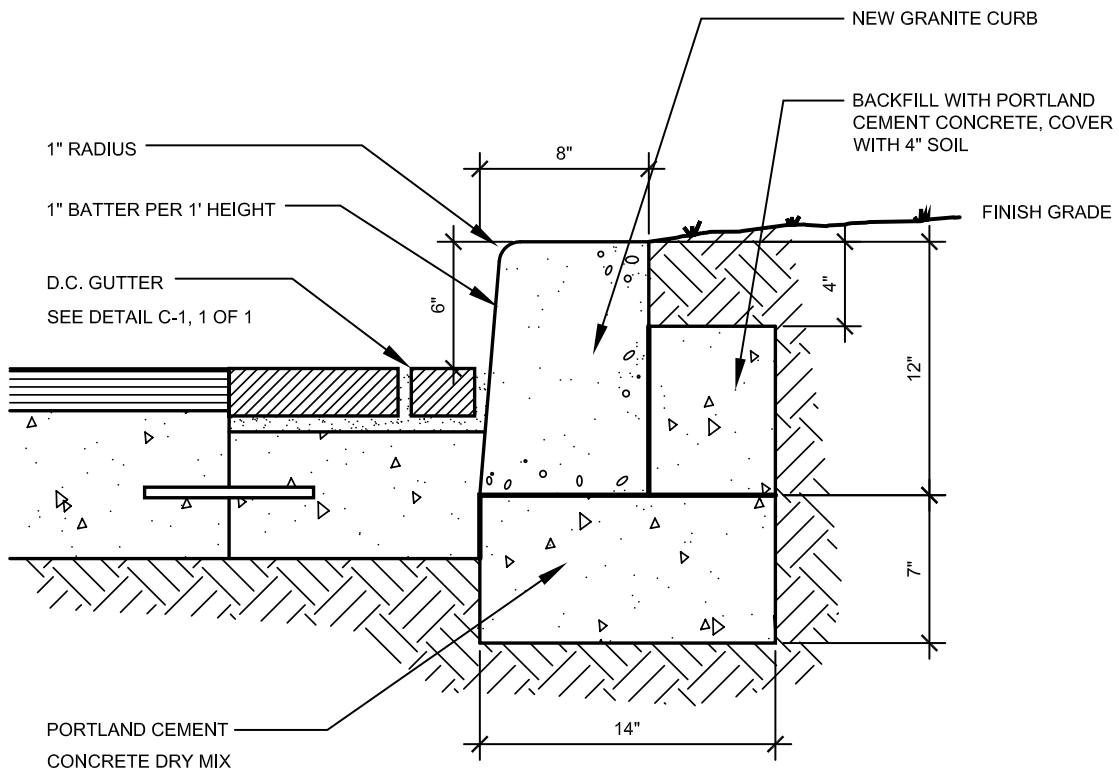
Job Conditions: Do not lay brick when temperature of outside air is below 40 degrees Fahrenheit (40° F), unless approved means are provided to heat materials. Protect work from cold and frost to ensure that mortar will harden without freezing.

Clean up: Clean dirt and mortar stains from brick using approved method. Methods that cause discoloration will not be permitted.

D



D.C. Granite Curb



SECTION

D-1
1 of 1

Figure 3: D.C. Granite Curb Detail
Interagency Initiative for National Mall Road Improvement

D-2

D.C. CURB SPECIFICATIONS—GRANITE

GRANITE SPECIFICATIONS FOR CURB, WHEELCHAIR RAMP, AND LAWN CURB

DESCRIPTION

This work consists of constructing or resetting granite curb, granite wheelchair ramps, and granite lawn curb.

MATERIAL

MATERIALS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

Bed course material shall consist of cinders, sand, slag, gravel, or crushed stone passing a 1/2-inch-square mesh sieve.

Joint filler shall be a hot-poured, elastic-type sealant conforming to AASHTO M 173.

Joint mortar shall consist of one (1) part masonry cement and two (2) parts fine aggregate by volume. The mortar shall have a minimum 28-day compressive strength of 2,100 pounds per square inch (psi) when tested in accordance with American Society of Testing Materials (ASTM) C 780. The mortar shall have an air content of 15 ± 3 percent when tested in accordance with AASHTO T 152 or AASHTO T 199.

Masonry cement shall conform to the requirements of ASTM C 91.

Portland cement shall conform to the requirements of AASHTO M 85.

Fine aggregate shall conform to the requirements of AASHTO M 45.

Water shall conform to the requirements of AASHTO M 157. The water shall contain no substances that would be detrimental to the finished product. Potable water of known quality may be used without testing.

GRANITE CURB AND LAWN CURB SHALL COMPLY WITH THE FOLLOWING REQUIREMENTS:

- a. Granite shall comply with requirements of the National Building Granite Quarries Association (NBGQA) for tolerances, color, and finish qualities.
- b. Granite stone shall have characteristics as defined by ASTM C 119 and C 615, and possess physical characteristics specified herein, in accordance with the following ASTM test references:
 - (1) Abrasion resistance of stone, subject to foot traffic, ASTM 241.
 - (2) Absorption of natural building stone, ASTM C 97.
 - (3) Compression strength of natural building stone, ASTM C 170.
 - (4) Modulus of rupture of natural building stone, ASTM C 99.
- c. The Contractor shall furnish certificates, obtained from the stone supplier, attesting that the stone be based on independent testing laboratory tests made within the last five years.

- d. First-quality granite shall be hard and durable; of a uniform or similar color, grain, size, and texture; free from seams, cracks, or other imperfections; and have a smooth splitting character. It shall be clean and show no evidence of any iron rust or iron particles.
- e. Granite stone shall be sawn-finished "Mount Airy" stone, as supplied by North Carolina Granite Company, or an approved equal. Stone shall be obtained from a single quarry owned and operated by the fabricator.
- f. When stone is sawed, all exposed surfaces shall be thoroughly cleaned and any iron rust or iron particles removed by sandblasting or other approved methods satisfactory to the Contracting Officer's Representative (COR). Saw marks in excess of 1/8 inch shall be removed.
- g. The stone shall be cut to the dimensions and configurations shown on the plans, with the tolerance being plus or minus 1/4 inch in any dimension, and 1/8 inch plus or minus from the top surface plane. Wheelchair ramps shall have a 4-inch minimum thickness with all edges vertical for joining.
- h. Wheelchair ramps shall be finished with a No. 4 cut parallel to the curb line and to an approximately true plane.
- i. Blocks shall be fabricated with "Lewis-type" lifting holes, or an approved equal, extending no closer than 2 inches from the finished face.
- j. Dress joints (bed and vertical) straight and at a 90-degree angle to the face, unless otherwise shown or required. Stone shall be cut to provide uniform 1/4-inch-wide joints.
- k. The top surfaces shall have a thermal finish, free of drill holes and surface imperfections. Back surfaces shall be flame cut or split at approximately right angles to the plane of the top surface. No projections or depressions greater than 1/4 inch will be allowed for a distance of 4 inches down from the top of the surface. The remaining distance shall have no projections or depressions greater than 1 inch. Drill holes will be permitted in the back surface, but they shall not show in the top arris.
- l. The front face of the curb and lawn curb stones shall be finished in the same manner as the top surface for full depth of reveal plus 2 1/2 inches. The arris between the top surface and the front face shall have a 1/4-inch bullnose.
- m. Ends of all curb and lawn curbstone shall be square with the top and face planes. The curb and lawn curbstones shall be finished in a manner that, when the stones are set, no space more than 1/4 inch shall show in the joint for the full width of the top surface or down the front face for 8 inches from the plane of the joint.
- n. The minimum length of the curb and lawn curbstones shall be 4 feet, unless otherwise shown on the drawings.

The Contractor shall employ only workers skilled in this class of work to ensure that the finished work meets the specified requirements.

CONSTRUCTION REQUIREMENTS

BEDDING .

Excavate or backfill to the required grade. Place and compact bed course material.

STONE CURB, WHEELCHAIR RAMPS, AND LAWN CURB

The Contractor shall provide an 18-inch by 18-inch by 1-inch sample indicating the actual color, textures, finish, and workmanship to be executed in the final work. No damaged, chipped, broken, discolored, stained, or otherwise defective material shall be submitted as a sample.

Stone shall be protected against moisture, freezing, soiling, staining, and physical damage during storage and construction.

Stone shall be handled in such a manner as to prevent chipping, breakage, soiling, or other damage. Devices such as pinch bars or wrecking bars shall not be used without protecting the edges of the stone with wood or similar material. Wide-belt-type slings or vacuum lifts shall be used, rather than wire rope, or ropes containing tar or other substances, which might cause staining. If required, wood rollers shall be used only if cushioning is provided on the end of the wood slide.

Stone shall be stored on wood skids or pallets, covered with a nonstaining waterproof membrane that allows the air to circulate around the stone.

Stonework fabrication shall be accomplished by skilled mechanics. Stone shall be cut for necessary adjustments only with saws or other devices used in the original shop fabrication process.

Stone shall be cleaned before installation by scrubbing with fiber brushes, followed by a thorough rinsing with clear water. Only mild cleaning compounds containing no hard fillers or abrasives shall be used.

Wet stone immediately before setting. Set stone in bed course material so the front face and top surface lines are directly in line and set to the appropriate grade. Make the joints a maximum of 1 inch wide and fill the joints with mortar. Complete the first 25 feet of curb to demonstrate the ability to build a curb meeting these requirements. This section shall be approved by the COR before construction continues.

Joints shall be constructed as shown on the drawings, except when the concrete pavement is to be constructed contiguous to the curb. In that case, construct the joints in the curb directly in line with the pavement expansion joints. Make the curb joint 3/4 inch wide and fill it with expansion joint filler of the same nominal thickness as the pavement joint. Fill all voids between the joint filler and the curb with mortar. Additional joints shall be constructed only upon approval by the COR.

Where they meet, the surface of the wheelchair ramp shall be flush with the granite curb and the back edges shall be set carefully to grade so they are flush with the sidewalk.

In the setting of the wheelchair ramp, the joint space between the sections of ramp shall be 1/8 inch. A joint space of 1/4 inch, with a 1/4-inch preformed expansion joint filler, shall be provided between the ramp and the curb and between the ramp and the sidewalk.

RESETTING STONE CURB AND LAWN CURB.

Carefully remove, clean, and store the curb. Cut or fit the curb as necessary for installation. Replace all lost, damaged, or destroyed curb.

E

NPS Granite Curb

(See D-2)

F



Sidewalk—Exposed Aggregate Concrete

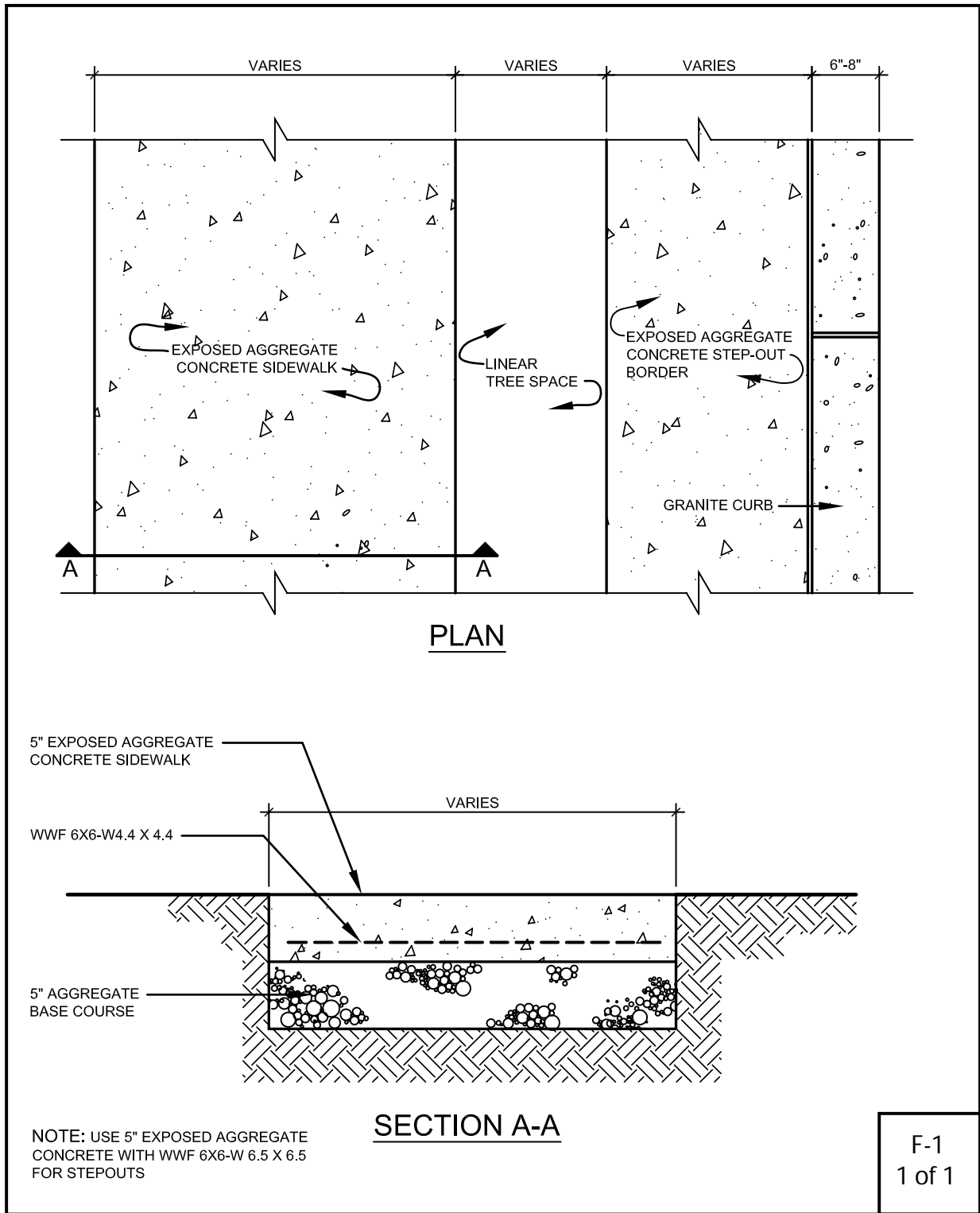


Figure 5: Sidewalk Detail—Exposed Aggregate Concrete

Interagency Initiative for National Mall Road Improvement

F-2

SIDEWALK SPECIFICATIONS—FOR EXPOSED AGGREGATE CONCRETE, STEP-OUT CURB BORDER, AND BUS STOP

DESCRIPTION

This work consists of constructing sidewalks, step-out curb borders, and bus stops.

MATERIAL

MATERIALS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

Bed course material shall consist of cinders, sand, slag, gravel, or crushed stone passing a 1/2-inch-square mesh sieve.

Concrete shall contain a minimum of 4 percent of entrained air, as determined by AASHTO T 152. Concrete shall have a slump of no more than 4 inches as determined by AASHTO T 119. The maximum water-cement ratio shall be 0.49. The minimum cement factor shall be 6 1/2 bags per cubic yard. The concrete shall develop a minimum compressive strength of 3,000 psi in 28 days.

Air-entraining admixtures shall conform to AASHTO M 154.

Water shall conform to AASHTO M 157. Water shall contain no substances detrimental to the finished product. Potable water of known quality may be used without testing.

Portland cement shall conform to AASHTO M 85.

Fine aggregate shall conform to AASHTO M 6, Class B, except that the material passing the No. 200 sieve is limited to 3 percent. Fine aggregates shall have a minimum sand equivalent value of 75 when tested in accordance with AASHTO T 176, Alternate Method No. 2.

Coarse aggregate shall be well graded, more than 1/2 inch and less than 3/4 inch in size, washed clean, smooth, rough, natural gravel from a single source. Coarse aggregate shall conform to AASHTO M 80, Class A.

Sidewalk shall match the color and texture of the Southside of Madison Drive between 3rd and 4th Street.

The surface retarder shall be sprayable for topical application, "Crete-Nox TA," manufactured by Nox-Crete Chemicals, Inc., Omaha, Nebraska, or approved equal.

Expansion joint filler shall be regranulated cork particles impregnated and bound with resins, ASTM D 1752-Type II. Resiliency recovery shall be 95 percent, if not compressed more than 50 percent of the original thickness.

Expansion joint sealant shall be polyurethane, Type I, traffic grade, and brown (beige) to match the exposed aggregate; a nonstaining primer, such as Chem-Calk 550, manufactured by Woodmont Products, Inc., or an approved equal, shall be used.

Welded wire mesh reinforcement shall conform to the requirements of AASHTO M 55.

CURING METHODS SHALL CONSIST OF THE FOLLOWING :

Keep the concrete surface continuously wet by ponding, spray, or covering with material that is kept continuously and thoroughly wet. Cure all concrete uninterrupted for at least 7 days.

CURING MATERIALS SHALL CONSIST OF THE FOLLOWING :

Burlap cloth conforming to the requirements of AASHTO M 182.

Waterproof paper conforming to the requirements of AASHTO M 171.

Polyethylene film conforming to the requirements of AASHTO M 171.

Liquid membrane compounds conforming to the requirements of AASHTO M 148.

Epoxy resin adhesives shall conform to the applicable requirements of AASHTO M 235.

Fly ash and raw or calcined pozzolans shall conform to the requirements of AASHTO M 295, except that the loss on ignition shall not exceed 3 percent. Do not use fly ash produced by plants that use compounds of sodium, ammonium, or sulfur to control stack emissions in concrete.

Nonshrink grout shall conform to the requirements of ASTM C 1107.

Joint-sealing materials shall conform to the requirements of AASHTO M 301.

Backer rod shall be closed-cell polyethylene conforming to the requirements of ASTM D 3204, Type 1. Use a compatible sealant as recommended by the manufacturer of the rod.

Deformed and plain billet-steel bars shall conform to the requirements of AASHTO M 31, Grade 60. Epoxy-coated reinforcing bars shall conform to the requirements of AASHTO M 284. Bars shall conform to the requirements of AASHTO M 254, Type A or B. Bars shall be plain round bars, free from burring or other deformations that restrict free movement in the concrete. Before delivery from the work site, paint one-half (1/2) the length of each dowel bar with one coat of the tar paint. When the paint has dried, and immediately before placing the dowels, lubricate the painted end to prevent the concrete from bonding to that portion of the bar.

For expansion joints, furnish a cap that will cover $2 \pm 1/4$ inches of the bar. The caps shall have a closed end and suitable stop to hold the end of the sleeve 1 inch from the end of the bar. Furnish caps that will fit snugly over the bar.

Lubricants for No. 4 bars may be rapid-curing, cut-back asphalt; medium-setting, emulsified asphalt; or a flaked graphite and vehicle.

CONCRETE COMPOSITION.

Before batching concrete, submit the proposed concrete proportions for approval. As a minimum, submit the following information:

- (1) Type and source(s) of all materials proposed for use.
- (2) Materials certification for all materials proposed for use.
- (3) Saturated surface dry weight of the fine and coarse aggregate per cubic yard of concrete.
- (4) Gradation of fine and coarse aggregate.
- (5) Weight per cubic yard of mixing water.
- (6) Weight of cement and fly ash per cubic yard of concrete.

- (7) Entrained air content of plastic concrete in percent by volume.
- (8) Maximum slump of plastic concrete in inches.

CONSTRUCTION REQUIREMENTS

Before placing exposed aggregate sidewalks, step-out borders or bus stop, the Contractor shall submit to the COR for approval a minimum of one test panel that is at least 4 feet by 4 feet in area and at least 5 inches in thickness. The materials and procedures used for test panels shall be the same materials and procedures to be used in the actual work. After a test panel has been approved, it shall be labeled indelibly, dated, and retained. All sidewalks, step-out borders, or bus stops shall match the approved test panels. The approved panels shall not be constructed as part of the sidewalk, step-out border, or bus pad. Test panels shall be initiated well in advance of the schedule for placement to allow for achieving an acceptable approved panel.

During the construction, the Contractor shall erect a protective fence, or approved equal, around the area under construction to keep pedestrians, runners and vehicles out of the area.

The Contractor shall limit the amount of area under construction to ensure that it can be completed in one (1) workday and, upon completion, shall have the appearance of the work constructed the previous workday.

Excavate or backfill to the required grade. Place and compact bed course materials in layers not exceeding 4 inches.

Design and construct forms to be free of bulge and warp and to allow their removal without injuring the concrete. Use wood, metal, or other suitable material for forms. Forms shall be kept clean and coated with a form release agent or form oil before placing concrete. Use forms that extend the full depth of concrete.

Moisten the foundation immediately before placing concrete. Consolidate the concrete with mechanical vibrators.

When placing concrete at or below an atmospheric temperature of 35° F, submit methods for concrete placement and protection to COR for approval. The forms, steel, and concrete shall be maintained at 60° F or higher during placement, and the concrete shall be maintained at 50° F or higher for the first six (6) days after placement. In hot weather, maintain the forms, steel, and concrete mixture below 90° F.

Welded wire fabric, where shown on the drawings, shall be set on supports at the mid-height of the concrete pour in a manner satisfactory to the COR, and shall be secured in place in such manner as to avoid displacement during the deposition of concrete.

EXPANSION JOINTS.

Construct 1/2-inch wide expansion joints where indicated on the drawings with premolded expansion joint filler. Additional joints shall be constructed only upon approval by the COR. Spacing of expansion joints should be no more than every 20'.

CONTROL JOINTS.

Divide the sidewalk into sections with control joints. Tool and then sawcut the joints to a depth of one-third (1/3) of the thickness of the concrete and approximately 1/8-inch wide with plastic inserts. Match the joints to adjacent joints in curb or pavements.

CONSTRUCTION JOINTS .

Form construction joints around all appurtenances such as manholes, utility poles, buildings, and bridges. Install 1/2-inch thick premolded expansion joint filler for the full depth of the concrete construction in these joints.

Finish exposed concrete surfaces to a uniform surface. Edge the outside edges of the slab and joints with a 1-inch radius edging tool.

Tool and remove free mortar and concrete from construction and expansion joints.

Spray surface with retarder immediately after finishing the surface to required levels. Follow the manufacturer's directions for rate of application and method.

As soon as the surface has set sufficiently, it shall be brushed with light wire brushes to the depth required to remove the cement mortar from the aggregate. Care must be taken not to dislodge the aggregate because patching will not be permitted. When the brushing is completed, the surface shall be carefully swept clean with fiber brushes to remove the mortar, which shall be legally disposed of off Government property. The aggregate shall not be overexposed.

The exposed aggregate surface shall be washed and rinsed when the desired finish is obtained.

Cure the concrete for at least 72 hours using a plastic cover or clear curing compound. During the curing period, protect the work from all pedestrian and vehicular traffic. Protect the concrete from vehicular traffic for an additional four (4) days.

To ensure that the finished surface conforms to the approved sample, the Contractor shall exercise extreme care to properly arrange this work and shall employ only workers skilled in this class of work.

G



Step-Out Curb Border—Exposed Aggregate Concrete

(See F-2)

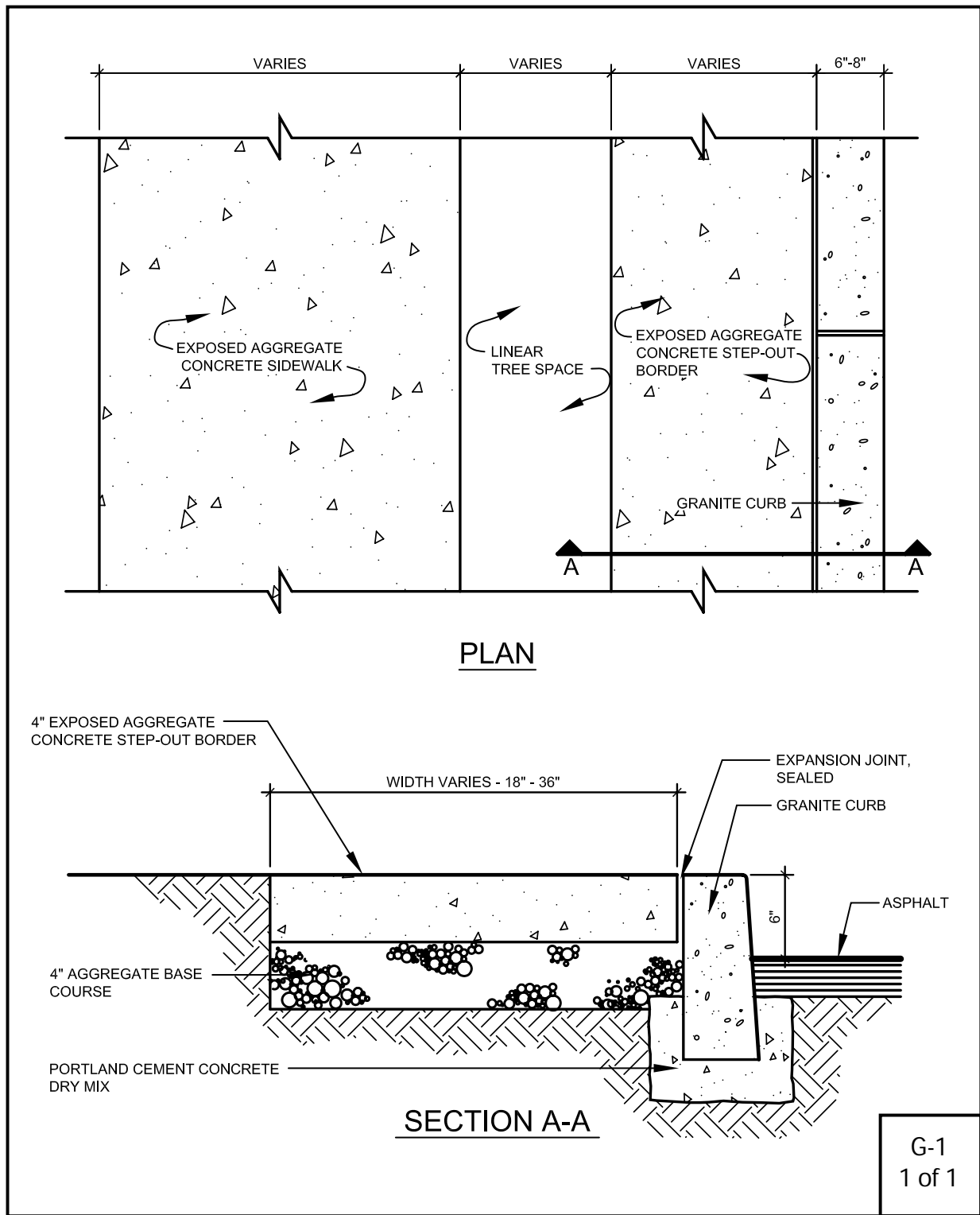


Figure 6: Step-Out Curb Border Detail—Exposed Aggregate Concrete

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Bus Stop—Exposed Aggregate Concrete

(See F-2)

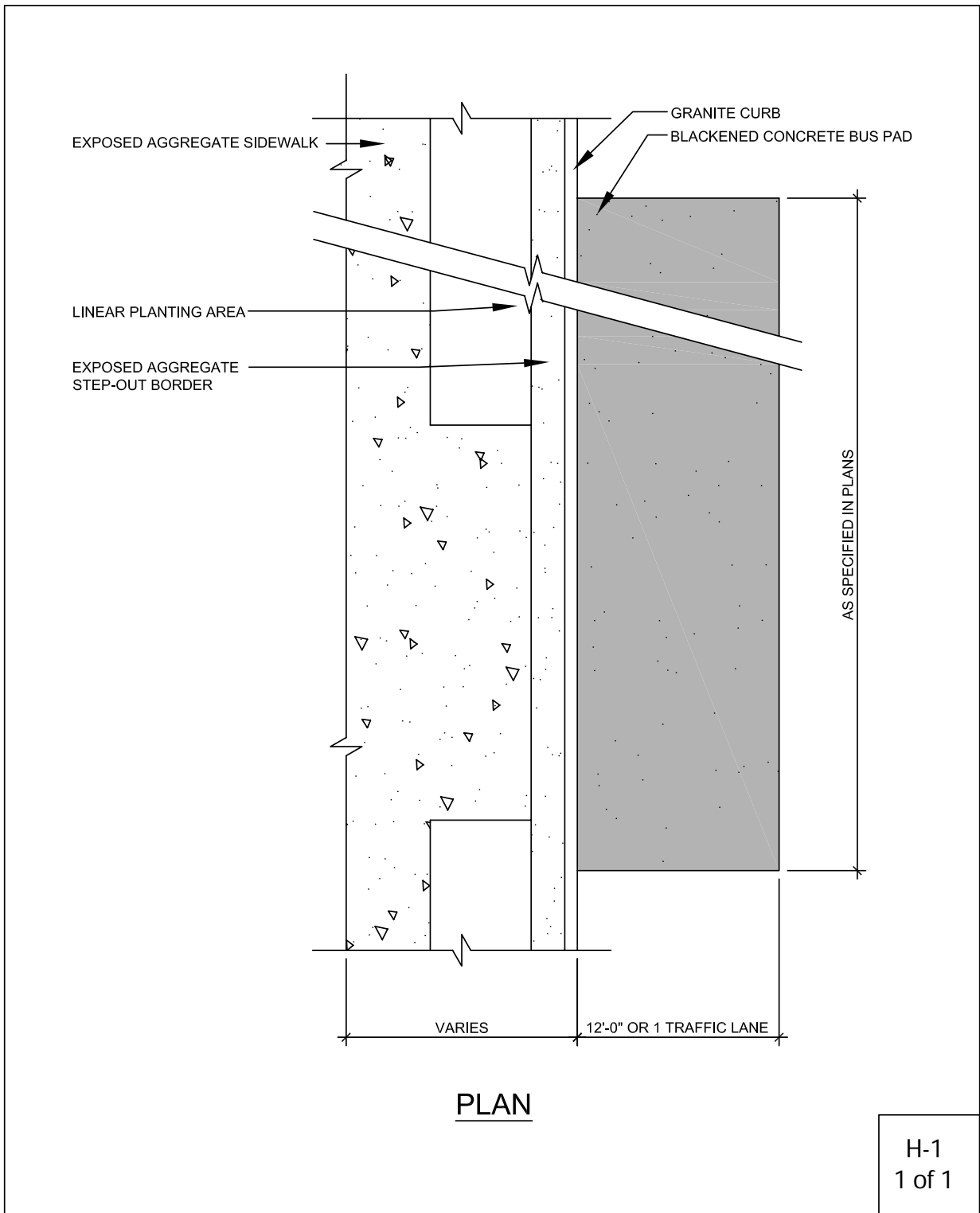
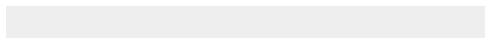


Figure 7: Bus Stop Detail—Exposed Aggregate Concrete

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Bus Pad—Blackened Concrete

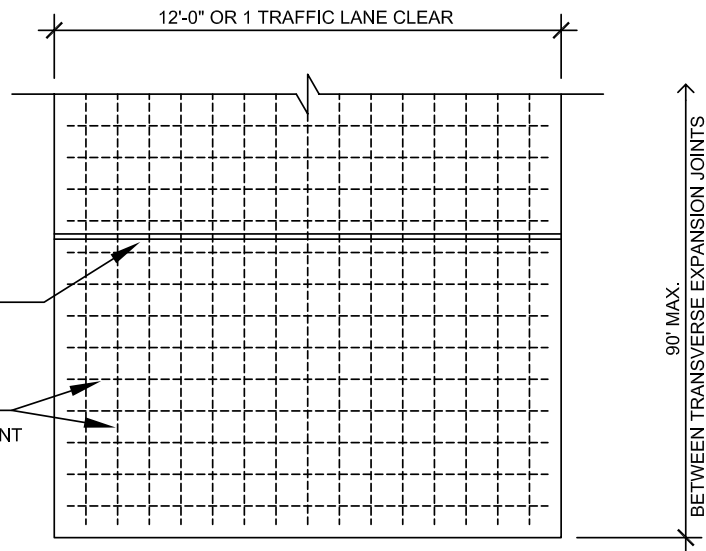
NOTES:

○ THICKNESS OF SLAB MAY VARY DEPENDING ON SUBGRADE CONDITIONS

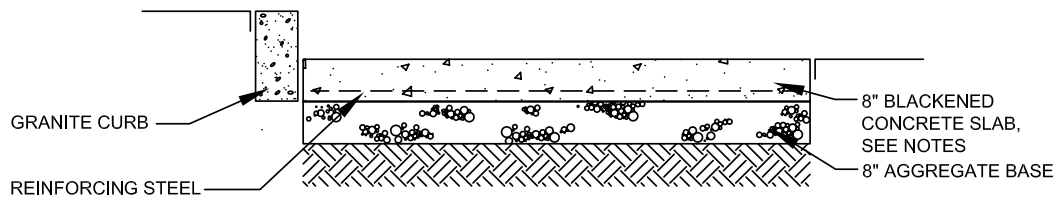
○ MATCH CONCRETE BASE JOINTS

CONTRACTION JOINT EVERY 12' OR WIDTH OF PAD

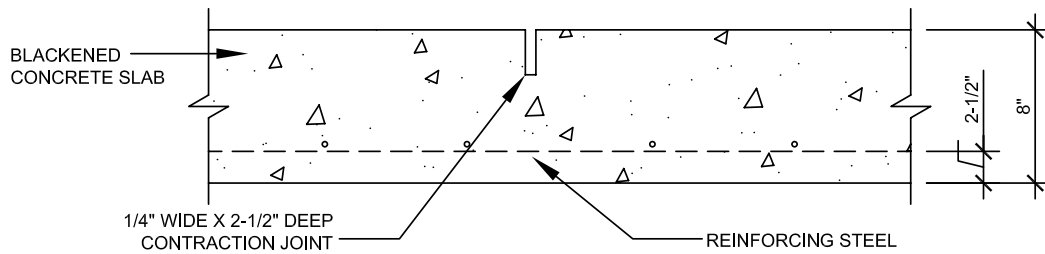
LONGITUDINAL AND TRAVERSE REINFORCEMENT NO. 4 BARS 12" O.C.



PLAN: BUS PAD



SECTION: BUS PAD



SECTION: CONTRACTION JOINT

I-1
1 of 1

Figure 8: Bus Pad Detail—Blackened Concrete

Interagency Initiative for National Mall Road Improvement

I-2

BLACKENED CONCRETE SPECIFICATIONS

DESCRIPTION

This work consists of constructing blackened concrete.

MATERIAL

MATERIALS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS :

Coarse aggregate shall conform to the requirements of AASHTO M 80, Class A. Do not use aggregate known to polish, or carbonate aggregates containing less than 25 percent by weight of insoluble residue as determined by ASTM D 3042. Aggregate size shall conform to the requirements of AASHTO M 43, No. 2. The adherent coating on the aggregate shall not exceed 1 percent in accordance with ASTM D 5711.

Fine aggregate shall be a sand that conforms to the requirements of AASHTO M 6, Class B, except that the material passing the No. 200 sieve is limited to 3 percent. However, when material finer than 2 micrometer (μm) (determined in accordance with AASHTO T 88) is less than 2 percent, the material passing the No. 200 sieve is increased to 5 percent. Perform the sulfate soundness test, AASHTO T 104, using sodium sulfate. The supplemental requirements of AASHTO M 6 for reactive aggregates are applicable. Fine aggregate shall have a minimum sand equivalent value of 75 when tested in accordance with AASHTO T 176, Alternate Method No. 2.

Portland cement shall conform to the requirements of AASHTO M 85. Limit the substitution of fly ash for all pozzolanic cements to 20 percent by weight of the portland cement. Types S and SA cements are permitted only when blended with portland cement in approved proportions.

Water shall conform to the requirements of AASHTO M 157. The water shall contain no substances that would be detrimental to the finished product. Determine water quality in accordance with the requirements of AASHTO T 26. Potable water of known quality may be used without testing.

CONCRETE SHALL CONFORM TO THE FOLLOWING REQUIREMENTS :

Maximum water-cement ratio: 0.49

Temperature of concrete: $70 \pm 20^\circ \text{F}$

Slump: 1.5 ± 1.0 inch

Air content: $6 \pm 1 \frac{1}{2}$ percent

Minimum 28-day compressive strength: 3,500 psi

Air-entraining admixtures shall conform to the requirements of AASHTO M 154.

Calcium chloride shall conform to the requirements of AASHTO M 144, Type L.

Chemical admixtures shall consist of water-reducing, set-retarding, and set-accelerating chemicals, or combinations thereof, that conform to the requirements of AASHTO M 194. When chemical admixtures are combined, they shall be compatible with each other.

If calcium chloride is used as an additive, the following conditions apply:

- (1) The calcium chloride shall be added to the concrete at the site when the ambient temperature is above 70° F. When the temperature is below 70° F, the calcium chloride can be added at the site or at the plant, as long as the length of time from mixing to delivery is less than 15 minutes.
- (2) At all times, the percentage of calcium chloride by weight of cement is limited to a maximum of 2 percent. The amount of calcium chloride added shall be no more than is necessary to produce the desired results.

If a high-range water reducer is used, the following conditions apply:

- (1) The concrete mix shall be altered to produce a 1-inch slump and approximately 8 percent air, before adding the high-range water reducer.
- (2) At all times, the high-range water reducer shall be added at the site. If calcium chloride is also being added, it shall be added before the high-range water reducer. The high-range water reducer shall be added immediately after the calcium chloride has been thoroughly mixed.
- (3) The high-range water reducer shall be added in accordance with instructions supplied by the manufacturer to provide a maximum 7-inch slump concrete for each placement. If the concrete begins to stiffen, an additional reduced dose of high-range water reducer shall be added.

After every addition of the high-range water reducer, the concrete shall be mixed for 2 minutes at mixing speed.

Concrete for reinforced portland cement concrete pavement shall have a black iron oxide color incorporated into the concrete mix. The color shall be "black." Samples showing the color range and finish shall be constructed and provided to the COR for approval before construction of this item.

PIGMENTS FOR INTEGRALLY COLORED CONCRETE SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

The pigments, or any combination of pigments, shall be capable of producing the desired color and color intensity at a dosage rate not exceeding 10 percent by weight of cement and shall contain no emulsified carbon black or chlorides. The pigments shall be free of lampblack, mineral black, silica, asbestine, talc, boneblack, or other fillers. They shall be free of substances deleterious to the strength, durability, or appearance of the concrete. Addition of the pigment at the approved rate to the concrete of the proportions and air content to be used in the work shall not reduce the compressive strength.

The pigment shall be delivered in sealed containers plainly marked with the manufacturer's name and address, together with the trade name of the project and a statement indicating whether or not an air-entraining admixture has been added to the pigment.

The pigment shall be a black iron oxide such as "Davis Colors Product #860" manufactured by Frank D. Davis Company, Beltsville, Maryland, (301) 776-2400, or approved equal.

Verify concrete mix designs with trial mixes prepared with ingredients at the maximum expected field temperature from the same source(s) as proposed for use.

Submit written mix designs to the COR for approval at least fourteen (14) calendar days before production. Each mix design submittal shall include the following information:

- (1) Project identification.
- (2) Name and address of the Contractor and concrete producer.
- (3) Mix design designation.
- (4) Class of concrete and intended use.
- (5) Material proportions.
- (6) Name and location of material sources for aggregates, cement, admixtures, and water.
- (7) Type of cement and type and class of fly ash, if used. Not more than 20 percent of the minimum weight of portland cement required may be replaced with fly ash at the rate of 1.2 pounds of fly ash per 1 pound of cement. The water to cement ratio for fly ash-modified concrete is the ratio of the weight of water to the combined weights of portland cement and 60 percent of the weight of the fly ash.
- (8) Cement content in pounds per cubic yard of concrete.
- (9) Saturated surface dry batch weight of coarse and fine aggregates in pounds per cubic yard of concrete.
- (10) Water content (including free moisture in the aggregate plus water in the drum, exclusive of absorbed moisture in the aggregate) in pounds per cubic yard of concrete.
- (11) Target water to cement ratio.
- (12) Dosage of admixtures. Entrained air may be obtained either by the use of air-entraining portland cement or an air-entraining admixture. Do not mix chemical admixtures from different manufacturers.
- (13) Sieve analysis of fine and coarse aggregate.
- (14) Absorption of fine and coarse aggregate.
- (15) Bulk specific gravity (dry and saturated surface dry) of fine and coarse aggregate.
- (16) Dry rodded unit weight of coarse aggregate in pounds per cubic foot.
- (17) Fineness modulus (FM) of fine aggregate.
- (18) Materials certification for cement, admixtures, and aggregates.
- (19) Target values for concrete slump without and with high-range water reducers.
- (20) Target values for concrete air content.
- (21) Concrete unit weight.
- (22) Compressive strengths of 7- and 28-day concrete. Pending 28-day strength results, a mix design may be approved on the basis of the 7-day compressive strength results if they equal or exceed 85 percent of the minimum average strength requirements and provided that no accelerators or early strength cements are used.
- (23) Material samples, when requested.

Begin production only after the mix design is approved by the COR.

Furnish a new mix design for approval if there is a change in a source of material or when the FM of the fine aggregate changes by more than 0.20.

CURING METHODS SHALL CONSIST OF THE FOLLOWING :

Keep the concrete surface continuously wet by ponding, spray, or covering with material that is kept continuously and thoroughly wet. Cure all concrete uninterrupted for at least 7 days.

CURING MATERIALS SHALL CONSIST OF THE FOLLOWING :

Burlap cloth conforming to the requirements of AASHTO M 182.

Waterproof paper conforming to the requirements of AASHTO M 171.

Polyethylene film conforming to the requirements of AASHTO M 171.

Liquid membrane compounds conforming to the requirements of AASHTO M 148.

Epoxy resin adhesives shall conform to the applicable requirements of AASHTO M 235.

Fly ash and raw or calcined pozzolans shall conform to the requirements of AASHTO M 295, except that the loss on ignition shall not exceed 3 percent. Do not use fly ash produced by plants that use compounds of sodium, ammonium, or sulfur to control stack emissions in concrete.

Nonshrink grout shall conform to the requirements of ASTM C 1107.

Joint-sealing materials shall conform to the requirements of AASHTO M 301.

Backer rod shall be closed-cell polyethylene conforming to the requirements of ASTM D 3204, Type 1. Use a compatible sealant as recommended by the manufacturer of the rod.

Deformed and plain billet-steel bars shall conform to the requirements of AASHTO M 31, Grade 60. Epoxy-coated reinforcing bars shall conform to the requirements of AASHTO M 284. Bars shall conform to the requirements of AASHTO M 254, Type A or B. Bars shall be plain round bars, free from burring or other deformations that restrict free movement in the concrete. Before delivery from the work site, paint one-half (1/2) the length of each dowel bar with one coat of the tar paint. When the paint has dried, and immediately before placing the dowels, lubricate the painted end to prevent the concrete from bonding to that portion of the bar.

For expansion joints, furnish a cap that will cover $2 \pm 1/4$ inches of the bar. The caps shall have a closed end and suitable stop to hold the end of the sleeve 1 inch from the end of the bar. Furnish caps that will fit snugly over the bar.

Lubricants for No. 4 bars may be rapid-curing, cut-back asphalt; medium-setting, emulsified asphalt; or a flaked graphite and vehicle.

CONSTRUCTION REQUIREMENTS

Forms shall be straight, steel forms with a depth equal to the pavement thickness at the edge and a minimum length of 10 feet. Furnish flexible or curved forms for edge radii less than 200 feet. Clean and oil forms before each use.

Prepare the base according to the plans. Uniformly dampen the base before placing the concrete.

Thoroughly and uniformly vibrate and compact the concrete during placement without segregating the material. Using templates or screeds, strike off the concrete to shape it to the required cross

section between the forms. Carry a slight excess of concrete in front of the leading edge of the template or screed. Float the surface to the required grade and cross section.

After floating, check the surface of the fresh concrete with a 10-foot straightedge. Remove high areas indicated by the straightedge. Lap each successive check with the straightedge over the previous check path.

Correct pavement edge slump in excess of 1/4 inch in 10 feet before the concrete has hardened. If edge slump exceeds 1 inch on any 1 foot or greater length of hardened concrete, remove and replace the entire panel between the transverse and longitudinal joints.

Before the concrete has initially set, work the pavement edges on each side of transverse expansion joints, formed joints, transverse construction joints, and emergency construction joints to produce a 1/4-inch continuous radius and a smooth, dense mortar finish. Do not use mortar buildup to round edges.

Slip-form machines and mechanical self-propelled spreading and finishing machines may be used, subject to the approval of the COR.

Finish all surfaces with transverse tining grooves between 1/16 inch and 1/8 inch wide and between 1/8 inch and 3/16 inch deep, spaced 1/2 to 3/4 inch on centers.

Transverse joints shall not vary more than 1/4 inch. Transverse joints shall be continuous through integral curbs or medians. Protect all joints from the intrusion of deleterious matter until sealed.

Remove and replace all newly placed concrete pavement where uncontrolled cracking occurs.

FORMED JOINTS .

Form joints with an approved nonmetallic or removal device while the concrete is plastic.

SAWED JOINTS .

Saw the joints within 24 hours of placing the concrete and before uncontrolled cracking occurs. Protect the sawed concrete faces from drying during the curing period. Saw sealant reservoirs no sooner than 72 hours after the concrete is placed.

If necessary, continue sawing day and night, regardless of weather conditions. Clean the saw cut and adjacent concrete surface of slurry residue after sawing each joint.

If a crack occurs at or near the joint location before sawing, do not saw the joint. Discontinue sawing when a crack develops ahead of the saw.

If a crack develops in reinforced concrete pavement, remove and replace a 10-foot-long, full-width slab properly attached to the adjacent slabs.

If a crack develops in plain concrete pavement, remove and replace a full-width slab properly attached to adjacent slabs.

TRANSVERSE EXPANSION JOINTS .

Form transverse expansion joints in the same manner as longitudinal joints. Place dowel bars through transverse joints. Hold dowels parallel to the surface and center line of the slab by a metal device that remains in the pavement. Dowel implanters may be used while the concrete is plastic, provided that they conform to the dowel tolerance specified. Remove all concrete that leaks into the joint expansion space.

Install the preformed joint filler full depth, perpendicular to the subgrade, and continuous across the full pavement width. Do not use damaged or repaired joint filler. If joint filler is assembled in sections, construct the joint without an offset between adjacent sections.

TRANSVERSE CONTRACTION JOINTS .

When required, place dowel bars through transverse joints in the same manner as for transverse expansion joints. Dowel bar sleeves and finishing caps are not required. Saw joints in the same manner as longitudinal joints. For adjacent lanes placed separately, construct joints continuously across the full width of the pavement.

Concrete edges adjacent to the joint may be rounded or beveled to a radius or length approved by the COR. Resaw or grind any joint that has an insufficient opening. If a joint is larger than required, furnish a larger size joint seal as approved by the COR.

Immediately after finishing and when marring will not occur, cure and maintain the concrete for a minimum of 72 hours. Do not leave the concrete exposed for more than 30 minutes during the curing period. Cure using one of the following methods:

WATER METHOD .

Entirely cover the surface of the pavement and the edges of the slab with water-saturated mats. Extend the mats at least twice the thickness of the pavement beyond the edges of the slab. Place the mats in complete contact with the surface. Use weights or other approved methods to maintain contact.

LIQUID MEMBRANE CURING COMPOUND METHOD .

Protect sawed joints from intrusion of foreign material into the joint before sealing. Repair damaged areas immediately using additional compound.

WATERPROOF COVER METHOD .

Thoroughly wet the surface using a fog mist applicator. Entirely cover the surfaces with a waterproof cover. Lap the cover over the pavement by at least 18 inches. Extend the cover beyond the edges of the slab at least twice the thickness of the pavement. Place the cover in complete contact with the surface. Use weights or other approved methods to maintain contact. Seal, sew, or cement lap the joints securely to prevent opening or separating while curing.

When the air temperature is expected drop below 35° F, furnish a sufficient supply of insulating material. Insulate the pavement surface and sides to a depth to maintain a temperature above 40° F for three (3) days. Furnish and place continuously recording thermometers.

Remove forms when the concrete has hardened sufficiently to resist damage, but not earlier than 12 hours after placing concrete. Immediately protect the sides of the exposed slabs with a curing method equal to that provided for the surface. Prevent erosion of the base course beneath the exposed pavement edges until shoulders are constructed.

Sawcut and seal joints before the pavement is opened to construction or public traffic. Do not saw sealant reservoirs within 72 hours of placing the concrete.

Immediately after sawing the joints, clean each joint of all foreign material, including the membrane curing compound and concrete slurry. Blow dry joints with compressed air. Do not apply sealing material unless the joint faces are clean and surface dry.

Use preformed joint seals, silicone sealant, or hot-poured sealant for expansion joints. Use silicone or hot-poured sealants for longitudinal and transverse contraction joints.

SILICONE OR HOT-POURED SEALANTS .

Install a backer rod with a steel wheel to the required depth. Provide a bond breaker between the sealant and the backer rod. Do not stretch or twist the backer rod during installation. Limit the length of backer rod installed to that which can be sealed during the same workday.

Place poured joint-sealing material when the air temperature exceeds 40° F. Immediately remove any excess or spilled material and clean the pavement surface. Do not use sand or similar material to cover the seal.

PREFORMED JOINT SEALS.

Install preformed joint seals without elongation using a lubricant adhesive that will cover both sides of the concrete joint. Install the top of the seal approximately 1/4 inch below the level of the pavement surface. Furnish a one-piece seal for the full width of each transverse joint. Remove and replace any seals that are stretched more than 5 percent, damaged, twisted, or improperly positioned.

After the concrete has sufficiently hardened, measure the smoothness of the surface. Use a 10-foot metal straightedge to measure at right angles and parallel to the center line at sites selected by the COR. Defective areas are surface deviations in excess of 1/4 inch between any two contacts of the straightedge with the surface. Correct all defective areas identified.

Do not allow traffic on new concrete pavement earlier than fourteen (14) calendar days after concrete placement, unless concrete tests indicate that one of the following conditions has been met:

A flexural strength of 550 psi according to AASHTO T 97.

OR

A compressive strength of 2,500 psi according to AASHTO T 22.

Do not allow traffic on the pavement when joint sealant is tacky and traffic debris would be embedded in the sealant.

J

Granite Wheelchair Ramps

(See F-2)

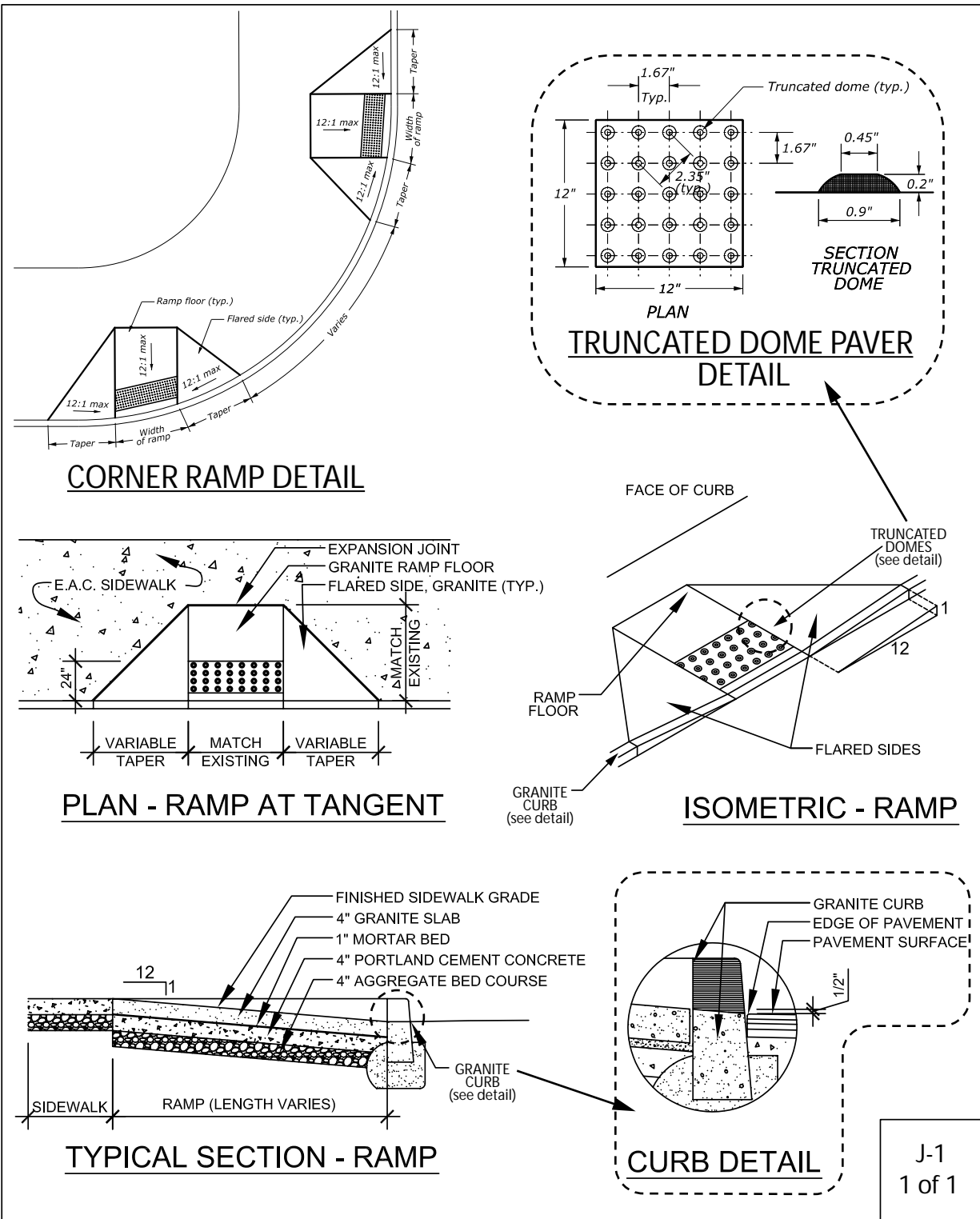
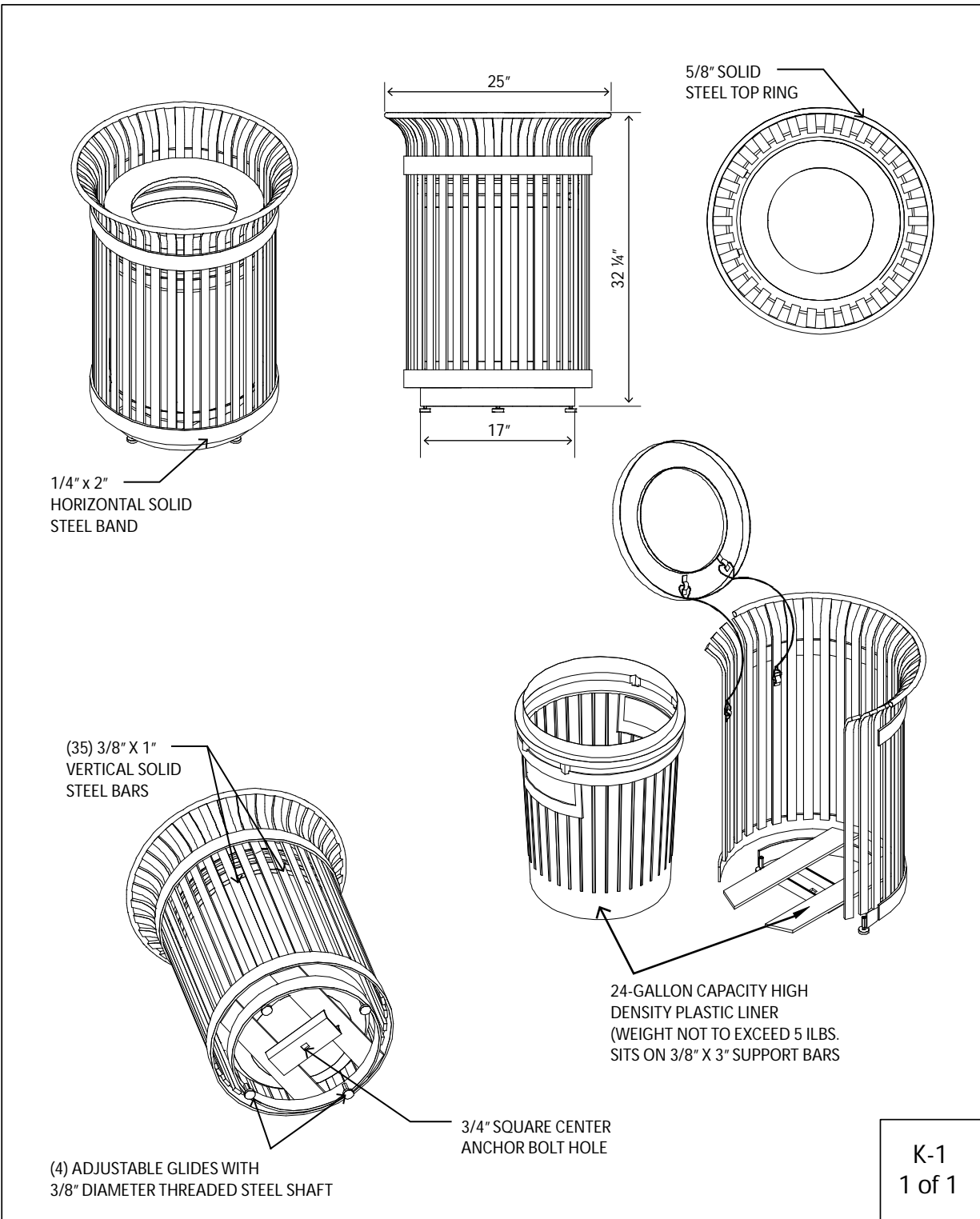


Figure 9: Wheelchair Ramps Detail—Granite

Interagency Initiative for National Mall Road Improvement

K, L, M, N

Trash & Recycling Receptacles



K-1
1 of 1

Figure 11a: NPS-Type Trash Receptacle Detail

Interagency Initiative for National Mall Road Improvement

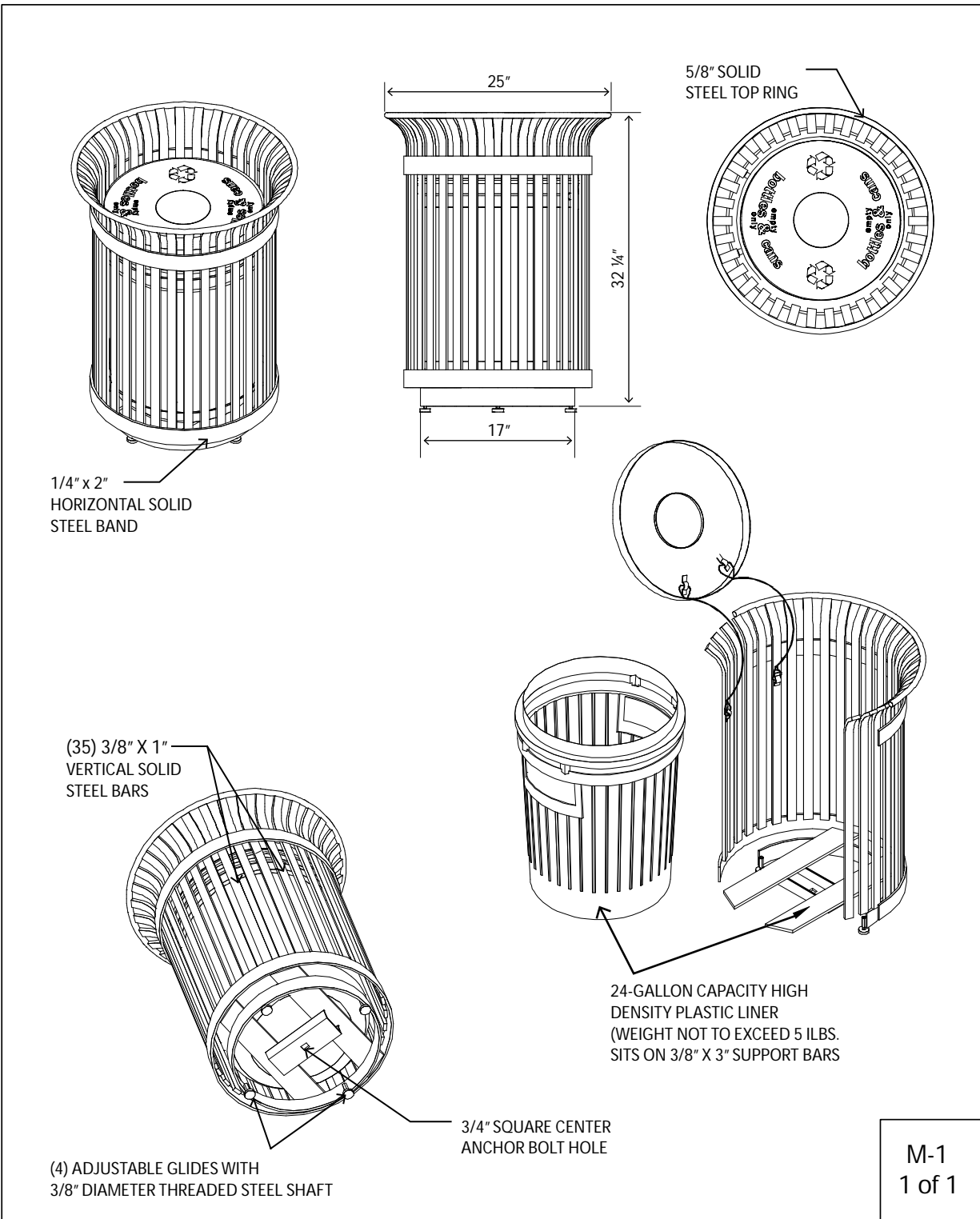


Figure 11b: NPS-Type Recycling Receptacle Detail

Interagency Initiative for National Mall Road Improvement

K-2, M-2

NPS-TYPE STANDARD TRASH AND RECYCLING RECEPTACLE SPECIFICATIONS

DESCRIPTION

This work shall consist of providing and installing metal trash and recycling receptacles, per drawing K-1, and M-1.

MATERIAL

Trash and recycling receptacles shall be exposed steel frame with electrostatically powder-coated steel sleeves, as manufactured by Victor Stanley, Dunkirk, Maryland, or an approved equal. Trash and recycling receptacles shall be 24 gallons, 32-1/4 inches high and 25 inches in diameter, per Victor Stanley Model S-35.

Receptacles will require anchor bolt for fastening to concrete sidewalks. Four adjustable glides will act as leveling feet. The high density plastic liner sits on 3/8" x 3" support bars.

Lid is secured with a vinyl coated galvanized steel aircraft cable. Cable is looped around welded in place attachment brackets and crimped in place. Receptacles shall be furnished with unbreakable plastic liners.

Receptacles and sleeve finishes shall be medium gloss black, 0.002 to 0.004 inches thick

Concrete for footings shall be as specified in F-2, Materials Section.

CONSTRUCTION REQUIREMENTS

Receptacles shall be installed per the manufacturer's recommendation.

SUBMITTAL

Submittals are required to approve one complete trash receptacle.

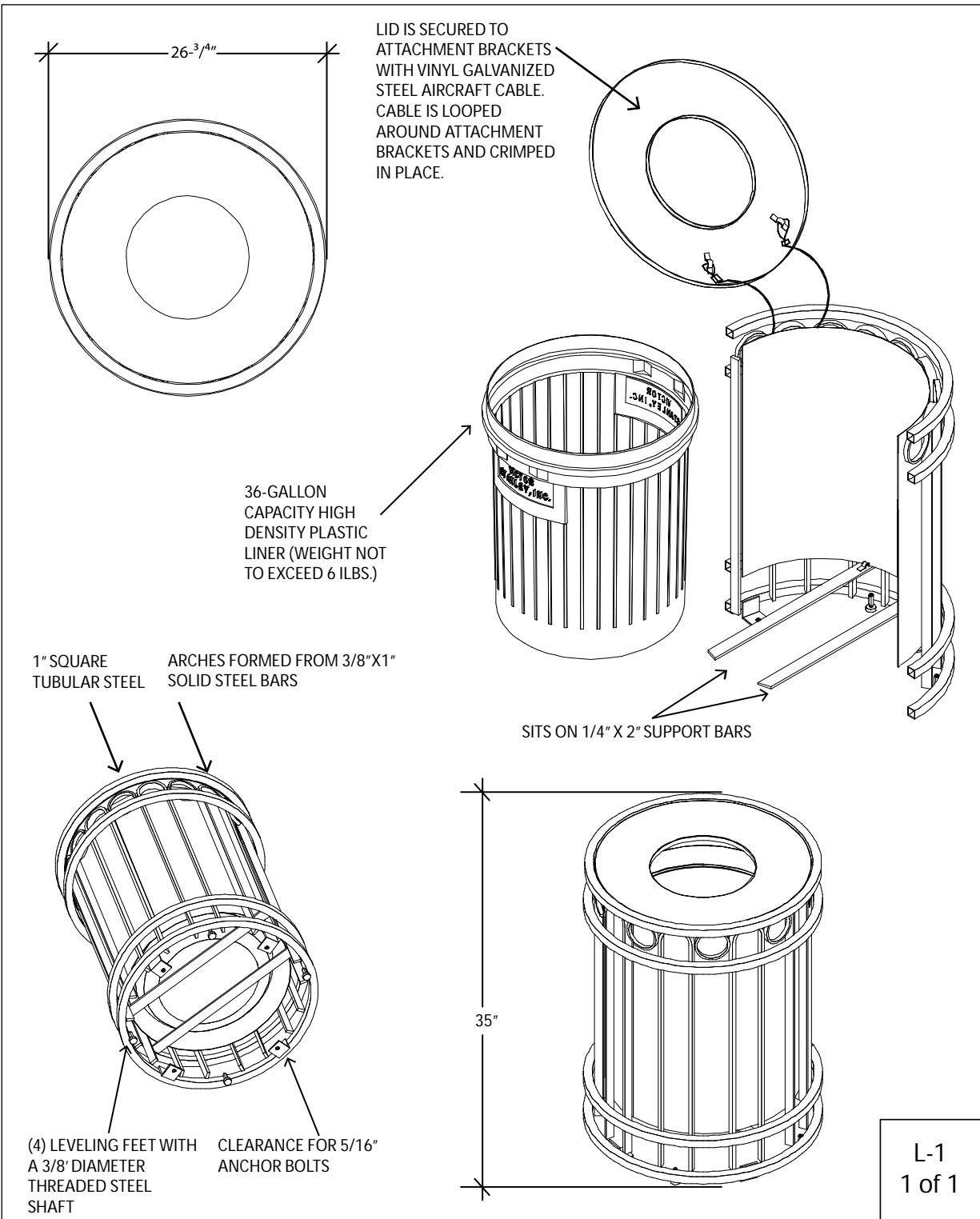


Figure 11c: Modified PADC Trash Receptacle Detail

Interagency Initiative for National Mall Road Improvement

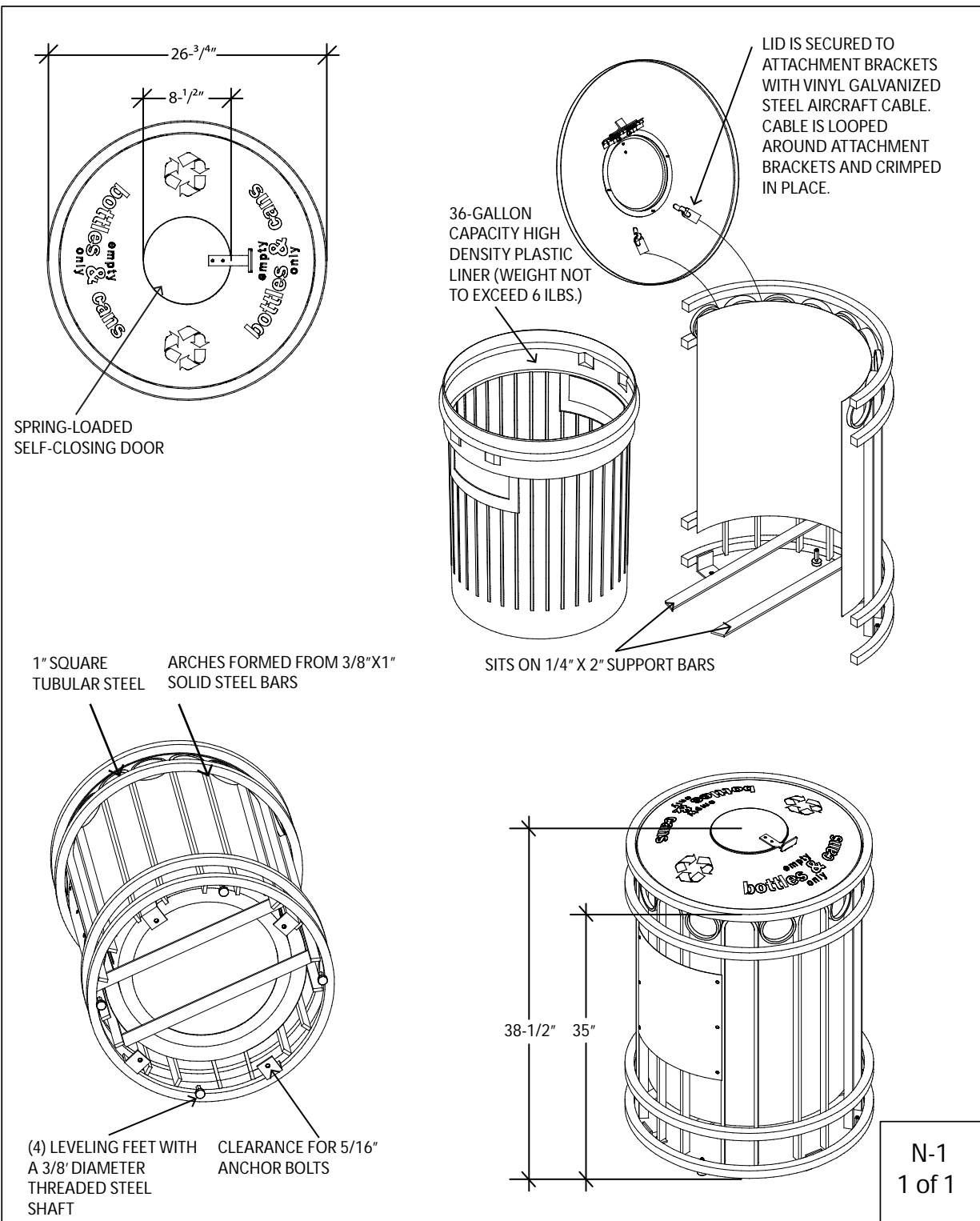


Figure 11d: Modified PADC Recycling Receptacle Detail

Interagency Initiative for National Mall Road Improvement

L-2, N-2

MODIFIED PADC TRASH AND RECYCLING RECEPTACLE SPECIFICATIONS

DESCRIPTION

This work shall consist of providing and installing metal trash and recycling receptacles, per drawing L-1, and N-1.

MATERIAL

Trash and recycling receptacles shall be exposed steel frame with electrostatically powder-coated steel sleeves, as manufactured by Victor Stanley, Dunkirk, Maryland, or an approved equal. Trash and recycling receptacles shall be 36 gallons, 35 inches high and 26-3/4 inches in diameter, per Victor Stanley Model PS0-32.

Receptacles will require anchor bolt for fastening to concrete sidewalks. Four adjustable glides with will act as leveling feet. The high density plastic liner sits on 1/4" x 2" support bars.

Lid is secured with a vinyl coated galvanized steel aircraft cable. Cable is looped around welded in place attachment brackets and crimped in place. Receptacles shall be furnished with high density plastic liners.

Concrete for footings shall be as specified in F-2, Materials Section.

CONSTRUCTION REQUIREMENTS

Receptacles shall be installed per the manufacturer's recommendation.

SUBMITTAL

Submittals are required to approve one complete trash receptacle.

O



Twin-Twenty Light Standard

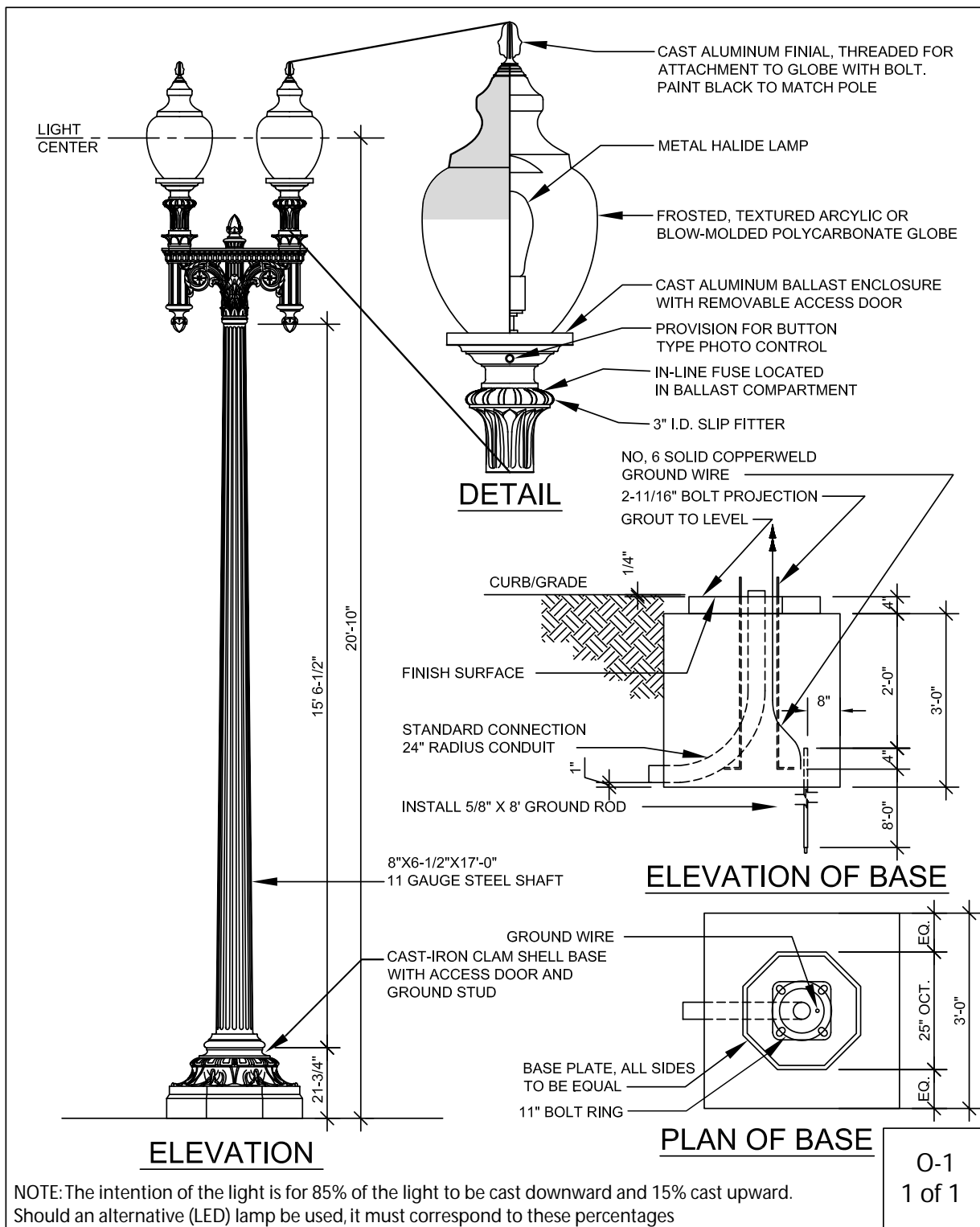


Figure 12: Twin-Twenty Light Standard Detail

Interagency Initiative for National Mall Road Improvement

O-2

LIGHT STANDARD SPECIFICATIONS

DESCRIPTION

This work consists of installing street lights.

MATERIAL

MATERIALS SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS:

Concrete shall contain a minimum of 4 percent of entrained air, as determined by AASHTO T 152. Concrete shall have a slump of not more than 4 inches as determined by AASHTO T 119. The maximum water-cement ratio shall be 0.49. The minimum cement factor shall be 6 1/2 bags per cubic yard. The concrete shall develop a minimum compressive strength of 3,000 psi in 28 days.

Water shall conform to AASHTO M 157. Water shall contain no substances detrimental to the finished product. Potable water of known quality may be used without testing.

Air-entraining admixtures shall conform to the requirements of AASHTO M 154. Calcium chloride shall conform to the requirements of AASHTO M 144, Type L.

Chemical admixtures shall consist of water-reducing, set-retarding, and set-accelerating chemicals, or combinations thereof, that conform to the requirements of AASHTO M 194. When chemical admixtures are combined, they shall be compatible with each other.

Coarse aggregate shall conform to the requirements of AASHTO M 80, Class A. Do not use aggregates known to polish, or carbonate aggregates containing less than 25 percent by weight of insoluble residue as determined by ASTM D 3042. Aggregate size shall conform to the requirements of AASHTO M 43, No. 2. The adherent coating on the aggregate shall not exceed 1 percent in accordance with ASTM D 5711.

Fine aggregate shall be a sand that conforms to the requirements of AASHTO M 6, Class B, except that the material passing the No. 200 sieve is limited to 3 percent. However, when the material finer than 2µm (determined in accordance with AASHTO T 88) is less than 2 percent, the material passing the No. 200 sieve is increased to 5 percent. Perform the sulfate soundness test, AASHTO T 104, using sodium sulfate. The supplemental requirements of AASHTO M 6 for reactive aggregates are applicable. Fine aggregate shall have a minimum sand equivalent value of 75 when tested in accordance with AASHTO T 176, Alternate Method No. 2.

CURING METHODS SHALL CONSIST OF THE FOLLOWING:

Keep the concrete surface continuously wet by ponding, spray, or covering with material that is kept continuously and thoroughly wet. Cure all concrete uninterrupted for at least 7 days.

CURING MATERIALS SHALL CONSIST OF THE FOLLOWING:

Burlap cloth conforming to the requirements of AASHTO M 182.

Waterproof paper conforming to the requirements of AASHTO M 171.

Polyethylene film conforming to the requirements of AASHTO M 171.

Liquid membrane forming compounds conforming to the requirements of AASHTO M148.

Underwriters Laboratories Inc. (UL) 1063, Machine-Tool Wires and Cables.

UL 1581, Reference Standard for Electrical Wires, Cables, and Flexible Cords.

Circuit breakers and panels shall conform to the requirements of UL 489 and UL 67. Furnish molded case thermal magnetic trip-type breakers. Furnish panel enclosures meeting the standards of National Electrical Manufacturers Association (NEMA) 3R, lockable with padlocks.

Safety disconnect switches shall be heavy duty, meeting the standards of NEMA 3R and conforming to the standards of UL 98.

Grounding and bonding equipment shall consist of 5/8-inch diameter, 8-foot-long, copper-clad steel ground rods, ground clamps, grounding and bonding bushings, and lock nuts conforming to the requirements of UL 467.

Contractor shall be a magnetic, 60-amp, two-pole contactor with a 120-volt toll, equipped with control switches for automatic actuation conforming to the requirements of UL 508. Furnish cadmium-sulfide-type photocell controls for 120- or 240-volt operation, as applicable; rated at 1,000 watts resistive load or 1,800 volt-amperes inductive load; adaptable for pole-top mounting in a plug-in, locking-type receptacle, conforming to the requirements of UL 773; and with a built-in surge protective device for protection from induced high-voltage and follow-through currents.

Furnish single-phase, 240/480-volt primary, 120/240-volt secondary, dry type, 60-Hertz, 1 kilovolt-ampere (kVA) transformers for indoor or outdoor use, conforming to the requirements of UL 506.

Secondary lightning arrester shall be rated for a maximum operating voltage of 650 volts RMS, and include a bracket for mounting on the control cabinet backboard.

Service poles for power supply shall be made of treated Southern Yellow Pine, treated Douglas Fir, butt-treated Western Red Cedar, or butt-treated Northern White Cedar. Furnish Class 4 services poles, 30-foot minimum length. Treat poles with a waterborne preservative, according to the applicable requirements of the American Wood-Preservers' Association AWPAC 1 and AWPAC 14.

Meter cabinets shall meet local power company requirements.

Control cabinet shall be a NEMA Type IV cabinet, equipped with door clamps on the unhinged sides, solid neoprene gasket, welded seams, continuous hinge with stainless steel pin, stainless steel external hardware, backboard for mounting apparatus, and a padlock with outdoor, tumbler-type padlocks keyed the same, supplied with two keys for each lock. Furnish a cabinet constructed of either (1) code-gauge stainless steel, ASTM A 167, Type 304, or (2) code-gauge aluminum sheet alloy, No. 5052-H32, with mechanical properties equivalent to or exceeding ASTM B 209.

Poles shall be Twin-Twenty-style rolled steel lamppost, Washington Globe #16 cast-iron lamppost, Washington Globe 14N cast-iron lamppost, or the Frederick Law Olmsted lamppost, as specified in the plans.

LAMPPOST STYLES

TWIN -TWENTY LAMPPOST :

Twin-Twenty-style rolled steel lamppost shall be D.C. standard street light, type 2C, TWIN A, with foundation and luminaries, in accordance with the following requirements:

The lamppost shall be as detailed on Drawing M-1. Post shall consist of three main assemblies plus two light fixtures. Fixture specifications will conform to Washington-style luminaire. The post components shall be as follows:

Octagonal cast-iron ornamental clam shell (2 piece) base per ASTM A 48-83, Class 30. Base shall be 25 inches across flats by 21 3/4 inches high, weighing 325 pounds ± 5 percent. Wall thickness shall be 5/8 inches.

The central member of the post shall be a fluted shaft of a minimum 11-gauge steel, provided with a steel base welded to the shaft and fastened to the concrete base by means of anchor rods. Provide a handhole in shaft for wiring. Outside diameter at top shall be 6 1/2 inches. Outside diameter at top of cast base shall be 7 3/4 inches. If new steel Twin-Twenty posts are placed near existing cast-iron Twin-Twenty posts, top and bottom diameters of new steel posts should match those of existing iron posts.

The shaft shall have 16 flat flutes equally spaced. The steel base shall be secured to the lower end of steel shaft by means of a double electric weld. It shall be provided with four holes to receive anchor rods. The top of the shaft shall have a tenon to consist of 3 1/2-inch Schedule 40 pipe, 16 inches long, with 6-foot length of pipe extending beyond the top of the shaft to accommodate the cross-arm assembly.

The upper cross-arm assembly shall be cast iron per ASTM A 48-83, Class 30. The upper cross-arm assembly shall weigh 270 pounds ± 5 percent.

Each post shall be equipped with four (4) 1-inch by 40-inch-long bolts with a 4" hook galvanized steel anchor and two (2) galvanized nuts and two (2) washers. The bolts shall be threaded for 8 inches.

All castings shall be painted with two coats of iron oxide primer and two finish coats of Benjamin Moore Ironclad Retardo Rust Inhibitive color C – 133 80 high gloss black or Bruning Rust Preventive Black Gloss 20-80. The steel shaft shall be painted inside and out with iron oxide paint prime coat.

Approximate weight of the complete post with cross-arm and fixtures is 990 pounds.

WASHINGTON #16 L AMPPOST :

Washington Globe #16 cast-iron lamppost shall be of two-piece construction, as detailed on Drawing N1, 1 of 2. The post shall consist of a cast base and a cast column. The castings shall be machined for interchangeability per DCDPW standards. The sections are to be as indicated below. The castings are to be true to pattern with 16 flutes. An access door secured with a tamper-proof screw shall be provided in the base of the lamppost. All ornamental components shall be cast iron per ASTM A 48-83, Class 30.

Column at Base: 7-inch outside diameter
3/4-inch minimum wall thickness from outer edge of flute to inside surface.

Column at Top: 4 9/16-inch outside diameter
1/2-inch minimum wall thickness from outer edge of flute to inside surface.

Base at Base: 24-inch outside diameter, 1-inch minimum wall thickness
Flange 1 1/8-inch minimum thickness.

Each post shall be equipped with four (4) 1-inch diameter by 30-inch-long bolts with a 4-inch hook galvanized steel anchor bolts threaded for 8 inches and two (2) galvanized nuts and two (2) washers. The base shall have four (4) 1 3/8-inch slip holes on a 17-inch diameter bolt circle.

All castings shall be painted with two coats of iron oxide primer and two finish coats of Benjamin Moore Ironclad Retardo Rust Inhibitive color C – 133 80 high gloss black or Bruning Rust Preventive Black Gloss 20-80.

Post height, less luminaire, shall be 13 feet 2 inches. The vertical light center with the luminaire is approximately 15 feet 1 inch. The approximate weight is 770 pounds ± 5 percent.

3 of O-2

WASHINGTON #14N L AMPPOST :

Washington Globe 14N cast-iron lamppost shall be of two-piece construction as detailed on Drawing N-1, 2 of 2. The post shall consist of a cast base and a cast column. The casting shall be machined for interchangeability per DCDPW standards. The sections shall follow the specifications indicated below. The castings are to be true to pattern with 16 flutes. An access door secured with a tamper-proof screw shall be provided in the base of the lamppost. All ornamental components shall be cast iron per ASTM A 48-83, Class 30.

Column at Base: 3/8-inch minimum wall thickness from outer edge of flute to inside surface.
Column to Top: 7/32-inch minimum wall thickness from outer edge of flute to inside surface.
Base at Base: 17-inch outside diameter.

Each post shall be equipped with four (4) 1-inch diameter by 30-inch-long bolts with a 4-inch hook galvanized steel anchor bolts threaded for 8 inches and two (2) galvanized nuts and two (2) washers per bolt.

All castings shall be painted with two coats of iron oxide primer and two finish coats of Benjamin Moore Ironclad Retardo Rust Inhibitive color C – 133 80 high gloss black or Bruning Rust Preventive Black Gloss 520-80.

Post height, less luminaire, shall be 10 feet 7 5/8 inches. The vertical light center with the luminaire is approximately 12 feet 3 inches.

FREDERICK LAW OLMSTED LAMPPOST:

Frederick Law Olmsted lampposts shall be of two-piece construction as detailed on Drawing O-1. The posts shall consist of a cast base and a cast column.

The cast-iron slipover base shall be per ASTM A 48-82. The shaft or column portion of the post shall be manufactured of a minimum of 7-gauge steel, 18 feet high with a taper of 0.14 inches per foot.

The tube shall be of monotube construction. It shall be formed from one-piece, 7-gauge steel without any sectional horizontal welds other than the weld at the base plate. There shall be a steel base plate at the bottom of the post that is double-welded to the steel shaft. The shaft shall have one longitudinal electrical weld, which shall be ground smooth after fabrication. After welding, the shaft shall be cold rolled and formed with 16 Doric flutes equally spaced.

Each post will be supplied with four (4) anchor rods. Anchor rods shall be 1 inch in diameter by 40 inches long and must project 2 5/8 inches above grade. The anchor rods are to be entirely galvanized. The bolts shall be supplied with galvanized hexagon nuts. The bolts shall be threaded for 8 inches.

All castings shall be painted with two coats of Benjamin Moore Ironclad Retardo Rust Inhibitive Paint, color #60, Bronzestone. The steel shaft shall be painted inside and out with a prime coat of iron oxide paint.

All posts shall be manufactured in accordance with the AASHTO "Standard Specifications for the Structural Supports for Highway Signs, Luminaries, and Traffic Signals."

LUMINAIRE STYLES

THE WASHINGTON -STYLE LUMINAIRE SHALL CONSIST OF THREE MAJOR COMPONENTS:

1. Cast-Iron Globe Seat and Fitter.

Design of the seat and fitter shall be such that it provides the same ornamentation as the pole. This casting shall be cast iron per ASTM A 48-72, Class 30. A shop coat of iron oxide metal

4 of O-2

primer shall be factory applied. The finish coat (two coats) shall be painted with two coats of iron oxide primer and two finish coats of Benjamin Moore Ironclad Retardo Rust Inhibitive Paint 163, color #80, Black Satin Finish, or approved equal. Dimensions of the seat and fitter shall be as shown on the drawings. Eight (8) weep holes shall be provided in the seat portion of the casting.

2. Electrical Ballast/Socket Component.

The ballast/socket component shall consist of a utility-grade, medium-base socket mounted on a cast aluminum socket mount that completely covers the wiring and ballast components. Mounting hardware and screws shall be stainless steel. The total component shall be easily removable; complete with the integral ballast/socket assembly for use with the lamp, as specified. Primary voltage shall be 120, 208, 240, 277, and 480 volts.

3. Globe Assembly—Washington Globe.

The globe shall be of the Washington-style acorn shape, manufactured of acrylic or blow-molded polycarbonate, frosted and textured. The Washington Globes shall be as manufactured by Formed Plastics, #118 stippled, or approved equal.

The Contractor shall provide certified photometric test data from an independent testing laboratory on the proposed lantern, as well as a computer readout that indicates light levels and a uniformity ratio for the area to be lit.

The lighting fixture, pole, and accessories shall be manufactured by Spring City Electrical Manufacturing Company of Spring City, Pennsylvania, or equal. The criteria for equal equipment shall be construction, aesthetics (similar appearance), and photometric performance.

The Contractor shall provide point-by-point foot-candle printouts of the entire area for evaluation. The printout shall indicate maintained light levels (light loss factor [LLF] = 0.70), uniformity, maximum, minimum, average, and so on.

The luminaire shall be UL listed.

The lamps for all lights shall be metal halide, C1E 3,200 k, diffuse coated, and shall meet American National Standards Institute (ANSI) specification M90.

FREDERICK LAW OLMSTED -STYLE LUMINAIRE :

The Frederick Law Olmsted luminaire shall be designed to fit properly and be aesthetically compatible with the Frederick Law Olmsted lamppost.

The material of the luminaire frame shall be cast iron. The cast iron shall conform to ASTM A 48-82, Class 25.

The globe shall be of clear acrylic. The unit shall be lamped for either incandescent or metal halide lighting, as specified. The distribution shall be symmetric. The voltage shall be 120, 208, 240, 277, or 480 volts, as specified.

The luminaire shall be equipped with a mogul screw base multiple socket. The luminaire shall have an internal aluminum reflector. The luminaire shall be prime painted at the factory with Sherwin Williams Recoatable Epoxy B67H5/367V5, or approved equal, and finish painted after installation. The finish coat shall be two coats of Benjamin Moore Ironclad Retardo Rust Inhibitive Paint, Bronzetone, color #60, or approved equal.

All hardware shall be stainless steel.

The Contractor shall provide certified photometric test data from an independent testing laboratory on the proposed lantern, as well as a computer readout that indicates light levels and a uniformity ratio for the area to be lit.

The lighting fixture, pole, and accessories shall be manufactured by Spring City Electrical Manufacturing Company of Spring City, Pennsylvania, or equal. The criteria for equal equipment shall be construction, aesthetics (similar appearance), and photometric performance.

The Contractor shall provide point-by-point foot-candle printouts of the entire area for evaluation. The printout shall indicate maintained light levels (LLF = 0.70), uniformity, maximum, minimum, average, and so on.

The luminaire shall be UL listed.

CONSTRUCTION REQUIREMENTS

Regulations and codes. Furnish materials and workmanship that conform to the standards of the National Electrical Code * (NEC), local safety code, UL, and NEMA.

Obtain permits, arrange for inspections, and pay all fees necessary to obtain electrical service.

Notify the local traffic enforcement agency, local utility company, or railroad company, one (1) week before any operational shutdown to coordinate connections or disconnections to an existing utility or system.

GENERAL .

At the preconstruction conference, submit a certified cost breakdown of items involved in the lump sum for use in making progress payments and price adjustments.

Fifteen (15) days before installation, submit a list of proposed equipment and materials. Include the manufacturer's name, size, and identification number of each item. Supplement the list with scale drawings, catalog cuts, and wiring diagrams showing locations and details of equipment and wiring.

The COR will establish the exact location of systems.

Where roadways are to remain open to traffic and existing systems will be modified, maintain the existing system in operation until the final connection to the modified circuit to minimize traffic disruptions.

CONDUIT .

Cut conduit so the ends are smooth. Connect conduit sections with couplings to butt the ends of both conduits squarely against each other inside the couplings. Provide a metal expansion and deflection fitting where conduit crosses a structural expansion joint.

Install conduits continuously between the outlets with a minimum of couplings to permit pulling conductors. Terminate conduits with bell fittings or bushings to seal out moisture and debris. Furnish pull wires for conduits designated for future cable installation. A mandrel (6 inches long by 1/2 inch smaller than the conduit) shall be pulled through the conduit, followed by a 1,500-pound test polyolefin pull wire. The pull line shall remain in the conduit.

Remove and replace crushed, deformed, or damaged conduits. Maintain conduits clean and dry, and protect the ends of conduits with plugs, caps, or fittings.

Below roadways, conduits shall be encased with concrete with a minimum of 2 inches of concrete on sides, 2 inches between conduits, and 3 inches above and below conduits.

Size pull boxes to provide for termination of the conduit and connection of the conductors.

INSTALLATION OF LIGHTING SYSTEMS .

Luminaires shall be installed in accordance with the manufacturer's recommendations. Wiring shall be connected to the luminaires using wire connectors. Connections shall be taped, and heat-shrinkable tubing shall be installed to form a waterproof connection. Luminaires and mounting poles shall be grounded as shown and specified in accordance with Article 410 of NEC. Design the control unit to energize the lighting circuit upon failure of any component of its circuit. Furnish a control with an "on" level adjustable between 1 and 5 foot candles. Operate luminaires with a parallel circuit distribution system at a potential not exceeding 277 volts.

Control lights and luminaires by photocell controls. For current less than or equal to 10 amperes, furnish a photocell switch. For current greater than 10 amperes, furnish a photocell switch operating a magnetic relay for switching the lighting circuit.

TESTING AND DEMONSTRATION PERIOD .

Before energizing any portion of the system, demonstrate that the conductor system is clear and free of all short circuits, open circuits, and unintentional grounds. Repair or replace faulty circuits.

After energizing the system, demonstrate to the COR that all electrical components work properly. Repair or replace faulty electrical components.

After completing electrical component tests, conduct a demonstration test for thirty (30) continuous calendar days. Adjust and correct any deficiencies in the system during the 30-day demonstration period. If any portion of the system is replaced or repaired, retest that portion of the system for an additional 30 calendar days.

WARRANTIES , GUARANTEES , AND INSTRUCTION SHEETS .

Deliver manufacturers' warranties, guarantees, instruction sheets, and parts lists to the COR at the final inspection.

Upon completion of the work, also submit as-built drawings showing all detailed changes from the original plans.

RELOCATIONS .

Use materials equivalent to existing materials, unless present codes require different or improved materials. Existing materials may be salvaged and reused provided all materials and installation methods used meet the requirements of applicable codes and ordinances.

P

Washington Globe Standards (See O-2)

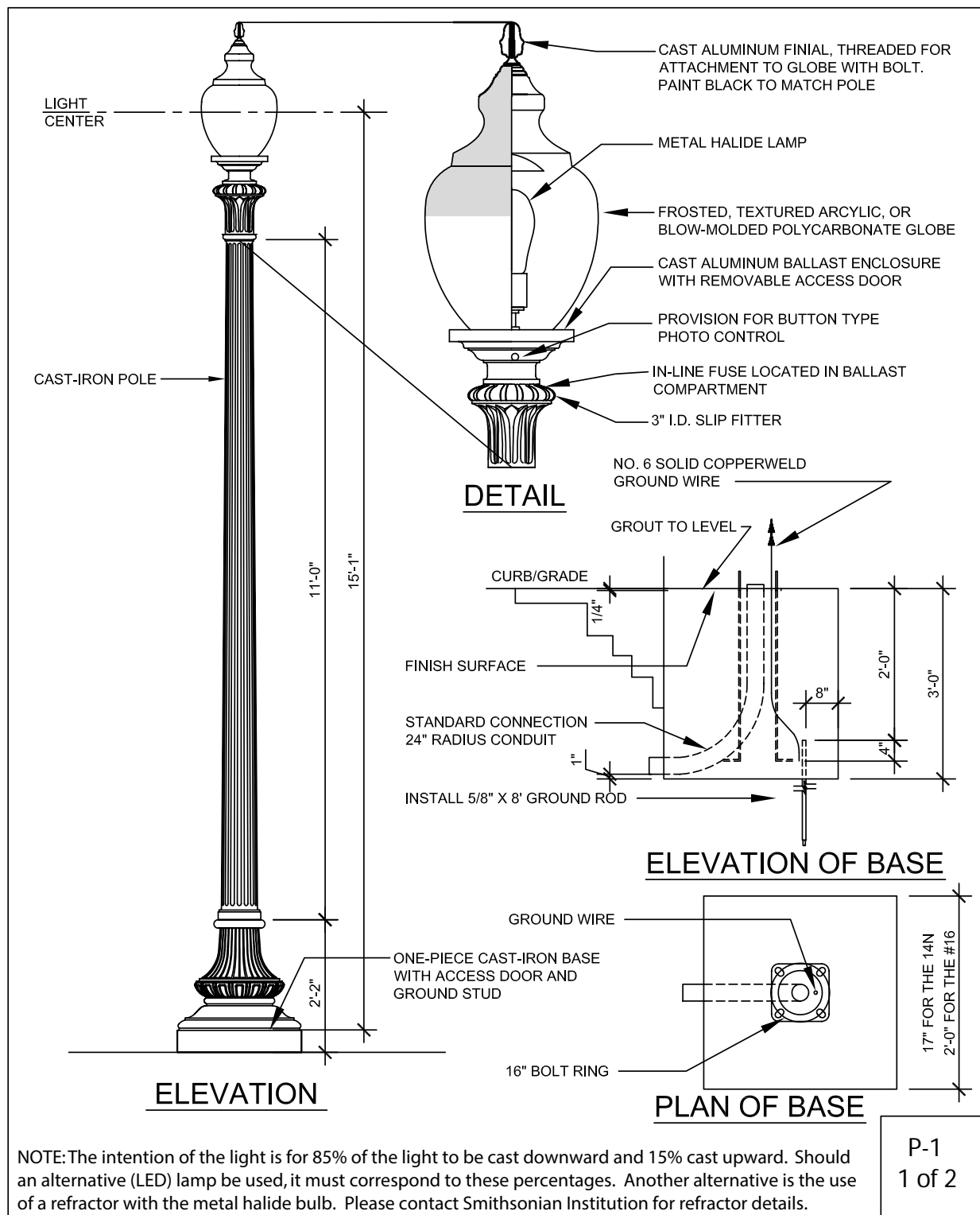


Figure 13: Washington Globe #16 Light Standard Detail

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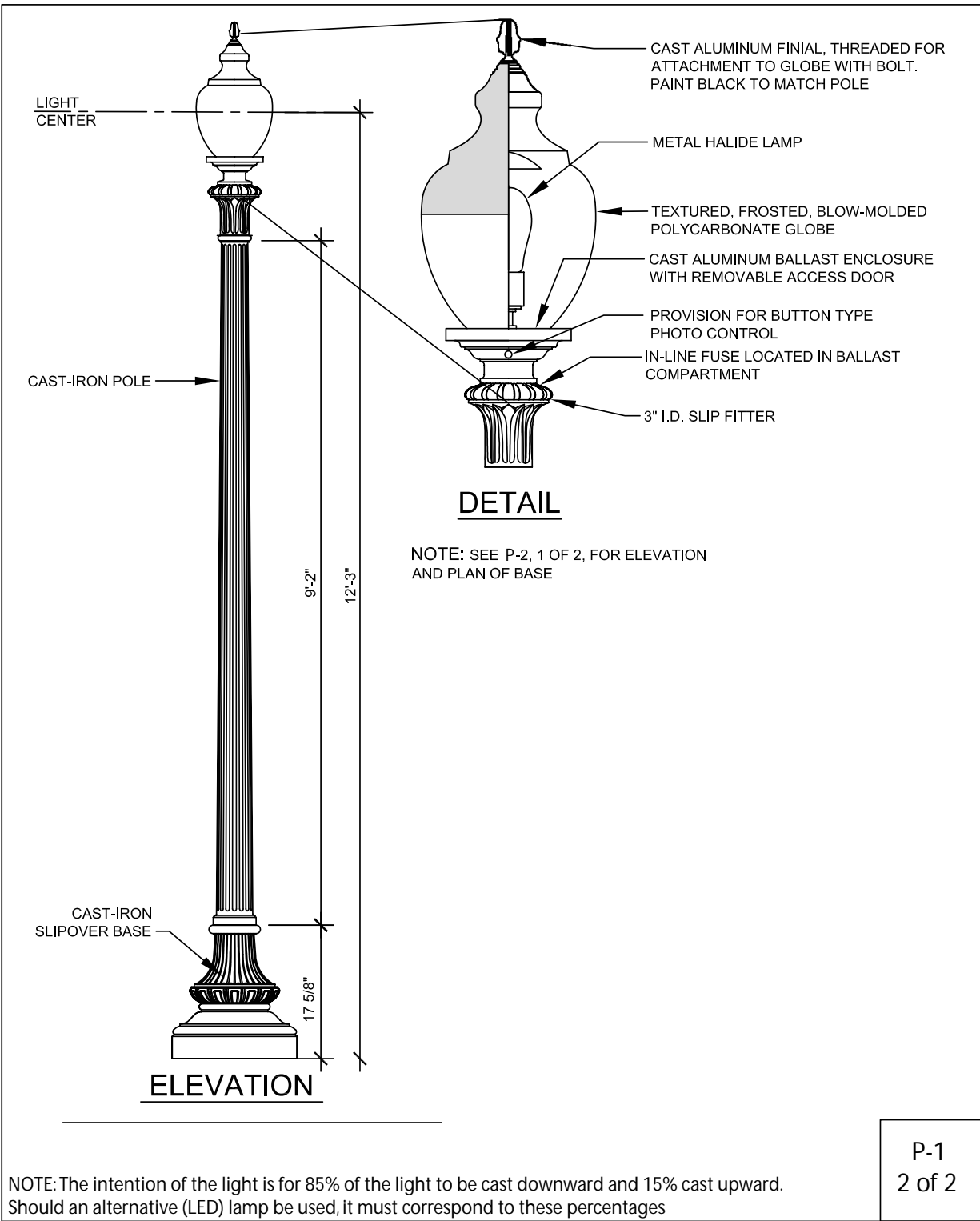


Figure 14: Washington Globe #14N Light Standard Detail

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Q

Frederick Law Olmsted Light Standard

(See O-2)

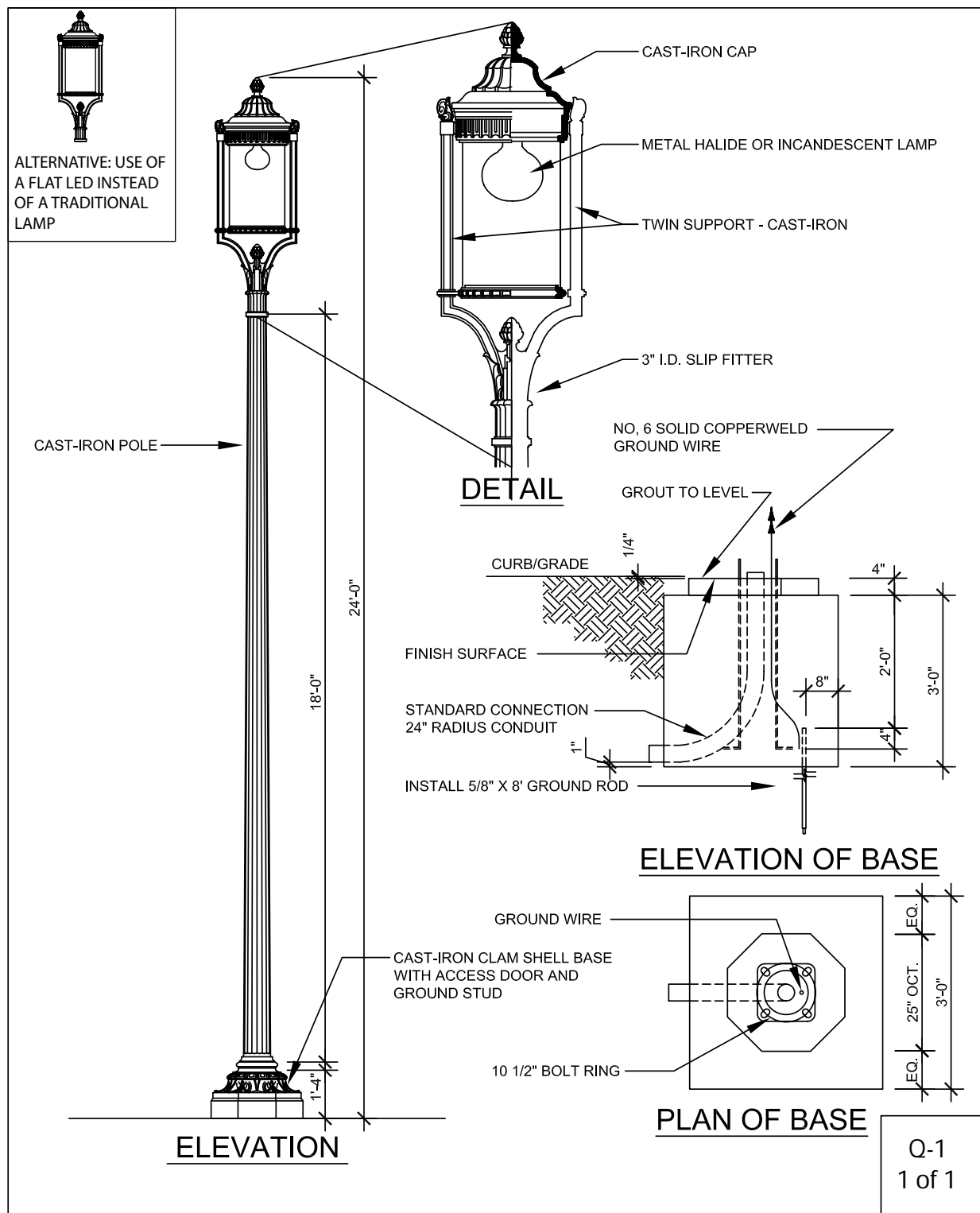


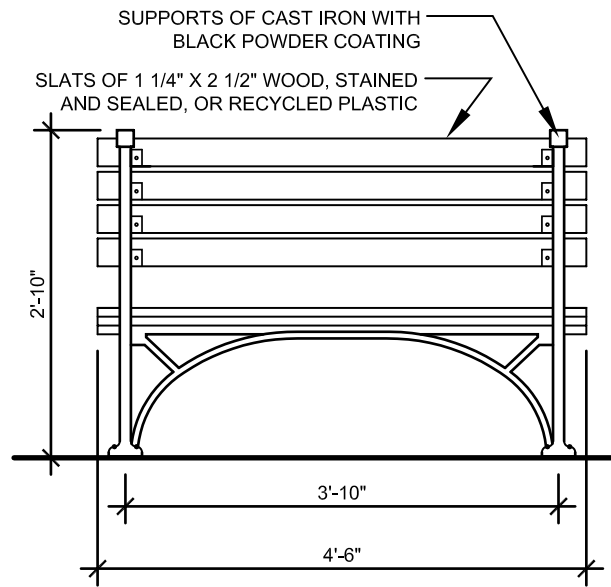
Figure 15: Frederick Law Olmsted Light Standard Detail

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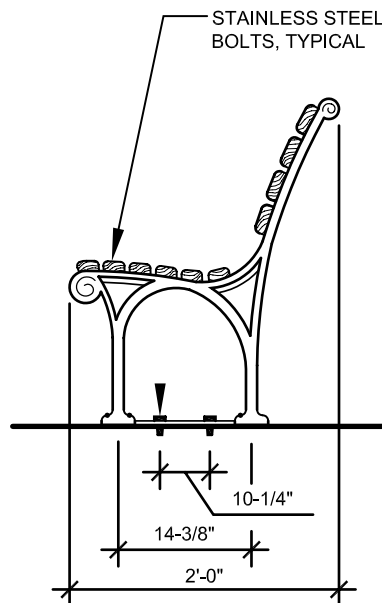
R, S



National Park Service Armless Bench
Bench with Arms



REAR VIEW

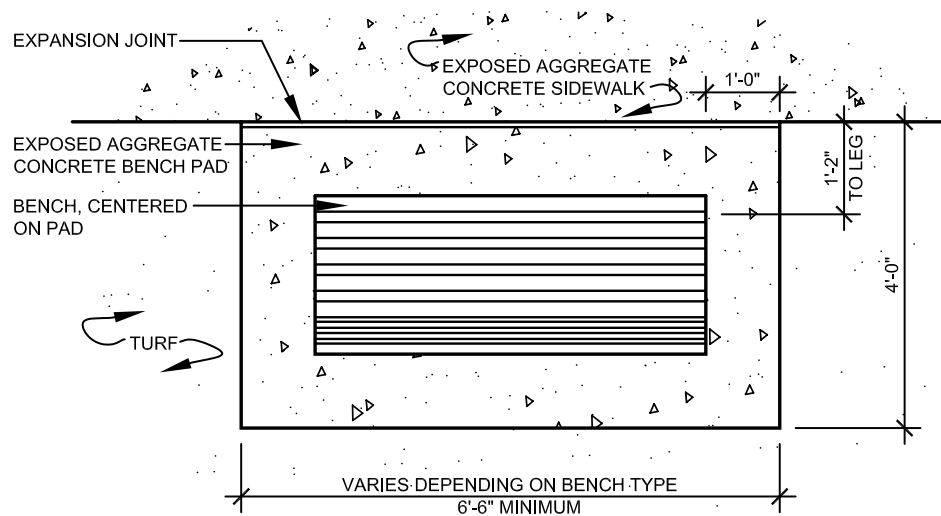


END VIEW

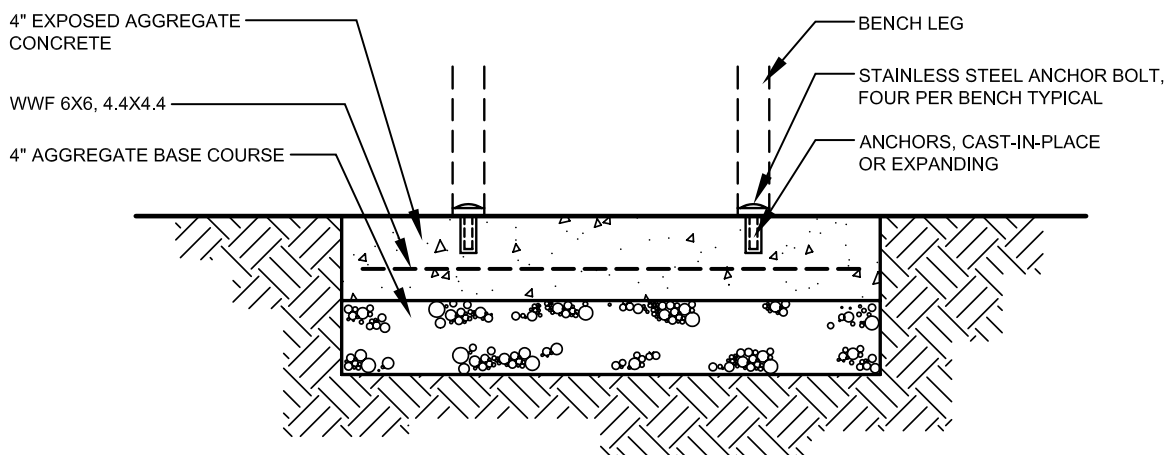
R-1
1 of 2

Figure 15: NPS-Type Armless Bench

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PLAN



SECTION A-A

R-1
2 of 2

Figure 16: NPS-Type Armless Bench

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R-2

NATIONAL PARK SERVICE BENCH SPECIFICATIONS

DESCRIPTION

This work consists of providing and installing NPS benches, per drawing R-1.

MATERIALS

Benches shall consist of wooden slats with cast-iron stanchions, and braces. The iron pieces shall be as manufactured by Fairmount Foundry in Hamburg, PA, with National Park Service-owned mold.

Wood shall be kiln dried, clean on all sides, Douglas Fir, or wood approved by the COR, 10 slats per bench. Wood shall be stained deep black, and stain shall be Bruning Rustic Stain exterior semitransparent oil Tint Base 331-1, or approved equal. The slats shall be predrilled and sanded with chamfered ends. All screws, nuts, and bolts shall be stainless steel.

Polyester powder coating for cast iron shall be 0.003–0.005 inches thick.

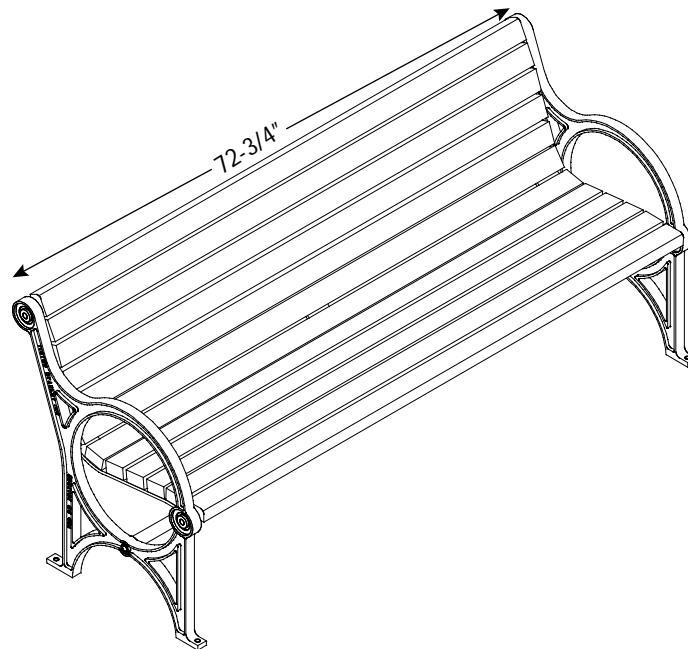
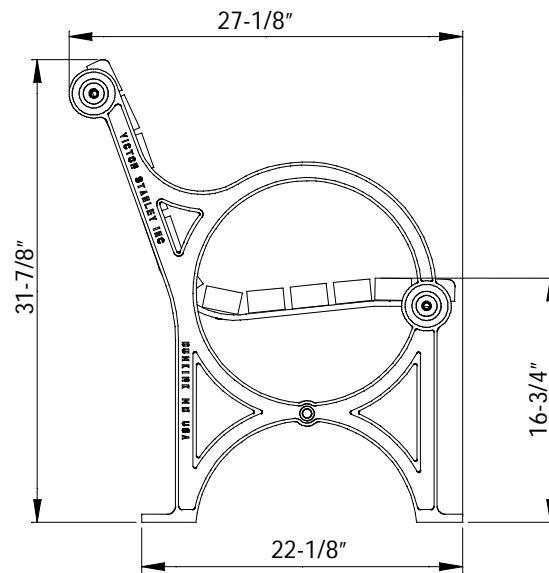
Bench pad shall be exposed aggregate concrete. For concrete design mix, see F-2.

CONSTRUCTION REQUIREMENTS

Benches shall be assembled completely and securely and shall be fastened securely to concrete bench pads, as shown in Detail R-1.

SUBMITTALS

Submit for approval one armless bench, completely assembled and stained.



S-1
1 of 1

Figure 17: Bench with Arms Details
Interagency Initiative for National Mall Road Improvement

S-2

BENCH WITH ARMS SPECIFICATIONS

DESCRIPTION

This work consists of providing and installing benches with arms, per drawing S-1.

MATERIALS

Benches shall consist of wooden slats (sustainably grown lpe) with ductile iron castings, as manufactured by Victor Stanley, Dunkirk, Maryland, or an approved equal. Benches shall be 31-7/8 inches high and 27-1/8 inches wide and 72-3/4 inches wide, per Victor Stanley Model C-12.

Powder coating for iron shall be black.

Bench pad shall be exposed aggregate concrete. For concrete design mix, see F-2.

CONSTRUCTION REQUIREMENTS

Benches shall be assembled completely and securely and shall be fastened securely to concrete bench pads, as shown in Detail R-1, 2 of 2, Section A-A.

SUBMITTALS

Submit for approval one completely assembled.



Inlet Covers

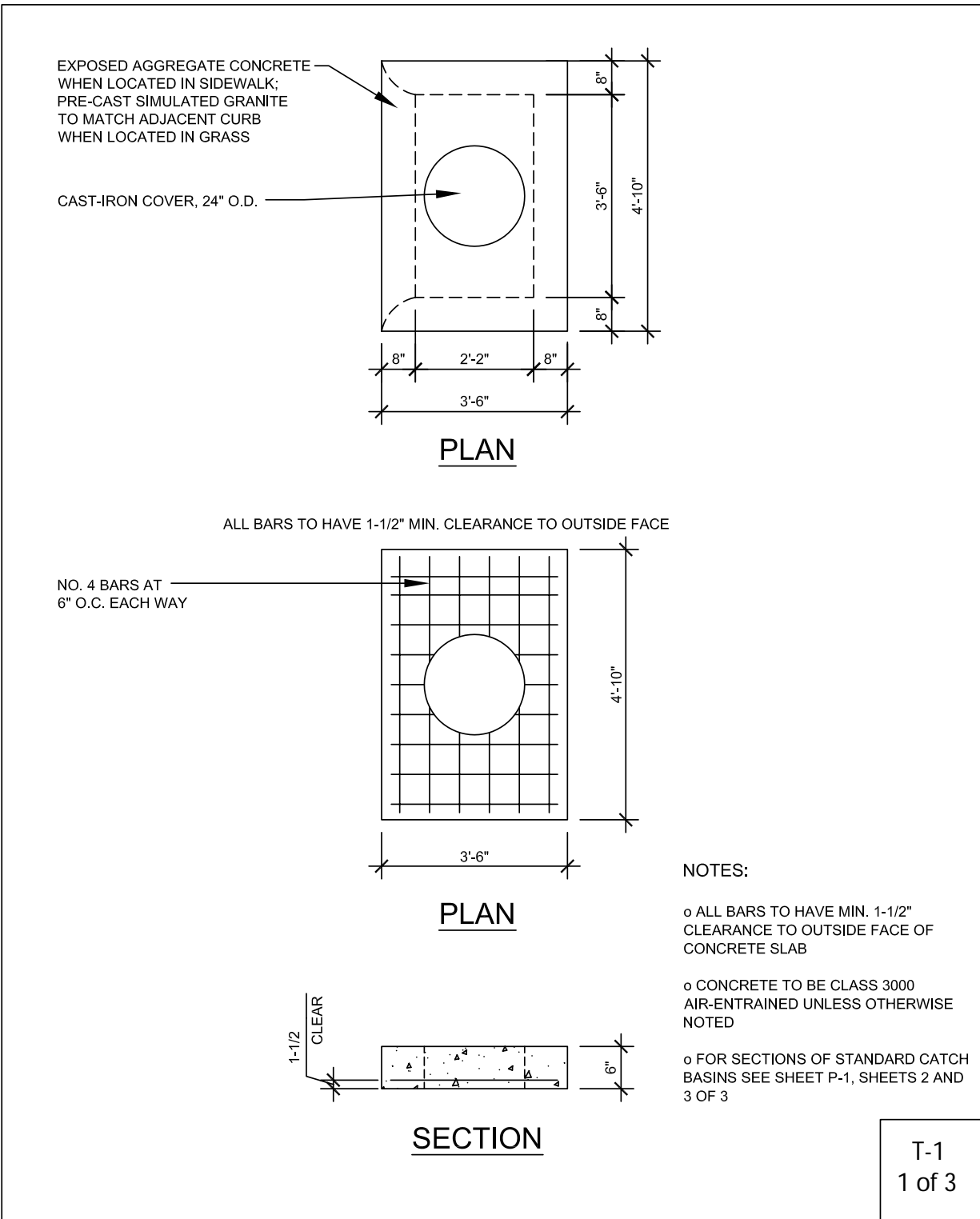


Figure 18: Standard Inlet Cover Detail

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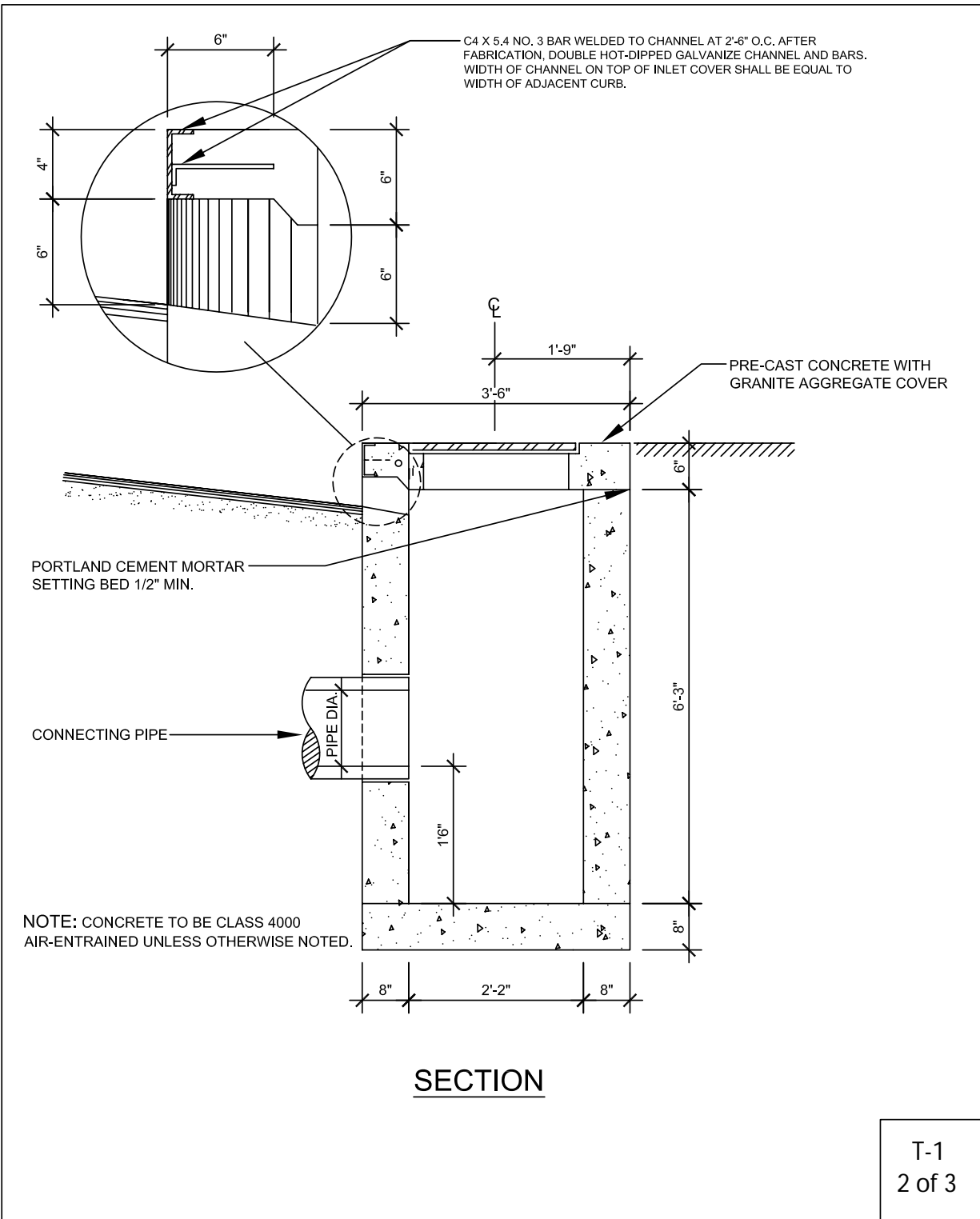


Figure 19: NPS Standard Catch Basin (Type I) Detail (With Pavement)

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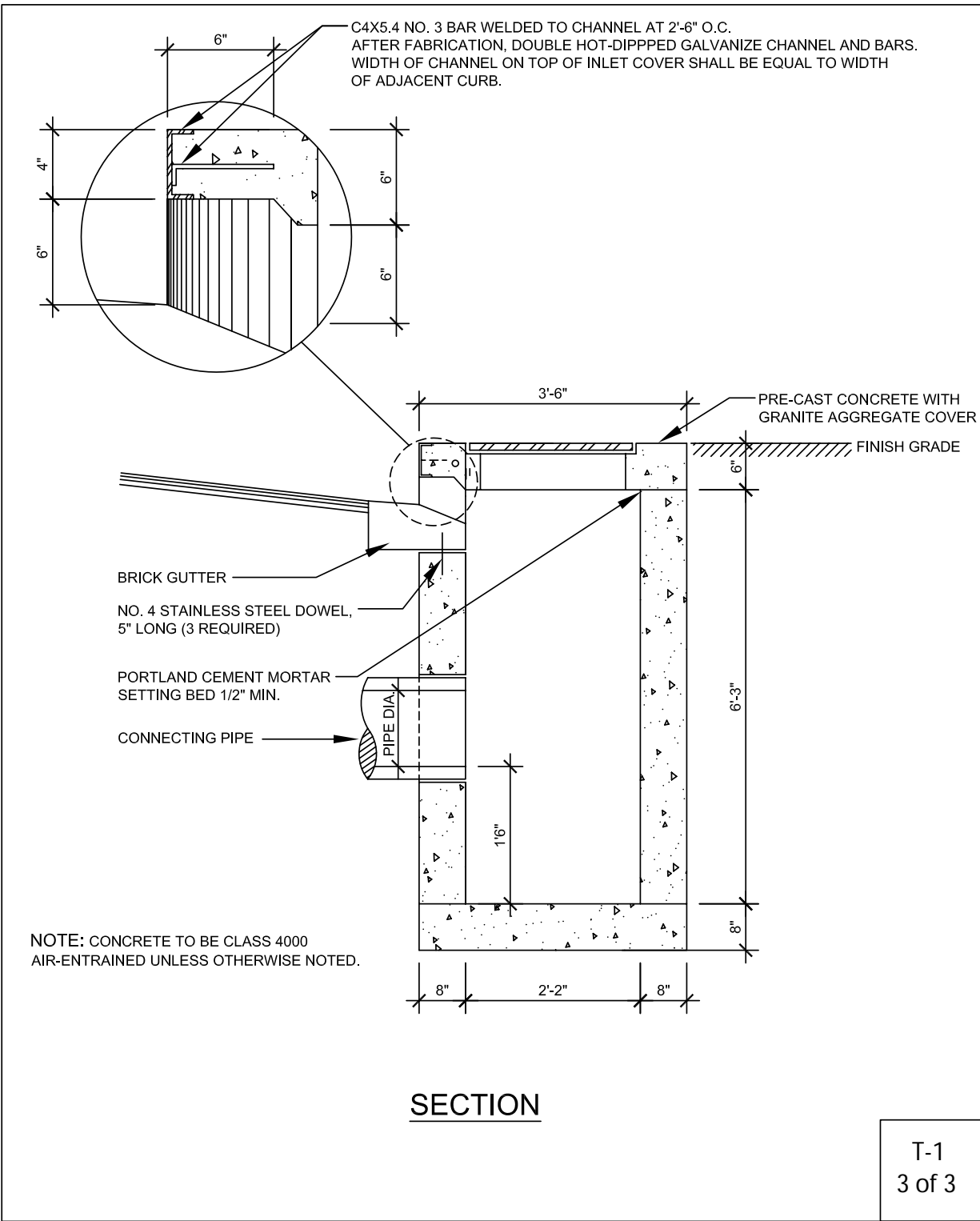


Figure 20: D.C. Standard Catch Basin Detail (With Gutter Pan)

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T-2

INLET COVER AND CATCH BASIN SPECIFICATIONS

DESCRIPTION

This work consists of constructing inlet covers and catch basins.

MATERIAL

Materials shall conform to the following requirements:

Concrete shall contain a minimum of 4 percent of entrained air, as determined by AASHTO T 152. Concrete shall have a slump of not more than 5 inches, as determined by AASHTO T 119. The maximum water-cement ratio shall be 0.49. The minimum cement factor shall be 6 1/2 bags per cubic yard. The concrete shall develop a minimum compressive strength of 4,000 psi in 28 days.

Air-entraining admixtures shall conform to the requirements of AASHTO M 154.

Calcium chloride shall conform to the requirements of AASHTO M 144, Type L.

Chemical admixtures shall consist of water-reducing, set-retarding, and set-accelerating chemicals, or combinations thereof, that conform to the requirements of AASHTO M 194. When chemical admixtures are combined, they shall be compatible with each other.

Coarse aggregate shall meet the requirements of AASHTO M 80, Class A. Do not use aggregate known to polish, or carbonate aggregates containing less than 25 percent by weight of insoluble residue as determined by ASTM D 3042. Aggregate size shall conform to the requirements of AASHTO M 43, No. 2. The adherent coating on the aggregate shall not exceed 1 percent in accordance with FLH T 512.

Fine aggregate shall be a sand that conforms to the requirements of AASHTO M 6, Class B, except that the material passing the No. 200 sieve is limited to 3 percent. However, when the material finer than 2µm (determined in accordance with AASHTO T 88) is less than 2 percent, the material passing the No. 200 sieve is increased to 5 percent. Perform the sulfate soundness test, AASHTO T 104, using sodium sulfate. The supplemental requirements of AASHTO M 6 for reactive aggregates are applicable. Fine aggregate shall have a minimum sand equivalent value of 75 when tested in accordance with AASHTO T 176, Alternate Method No. 2.

CURING METHODS SHALL CONSIST OF THE FOLLOWING :

Keep the concrete surface continuously wet by ponding, spray, or covering with material that is kept continuously and thoroughly wet. Cure all concrete uninterrupted for at least 7 days.

CURING MATERIALS SHALL CONSIST OF THE FOLLOWING :

Burlap cloth conforming to AASHTO M 182.

Waterproof paper conforming to AASHTO M 171.

Polyethylene film conforming to AASHTO M 171.

Liquid membrane forming compounds conforming to AASHTO M 148.

CONCRETE COMPOSITION

Before batching concrete, submit the proposed concrete proportions for approval. As a minimum, submit the following:

- (1) Type and source(s) of all materials proposed for use.
- (2) Materials certification for all materials proposed for use.
- (3) Saturated surface dry weight of the fine and coarse aggregate per cubic yard of concrete.
- (4) Gradation of fine and coarse aggregate.
- (5) Weight of mixing water per cubic yard.
- (6) Weight of cement and fly ash per cubic yard of concrete.
- (7) Entrained air content of plastic concrete in percent by volume.
- (8) Maximum slump of plastic concrete in inches.

Concrete brick shall conform to the requirements of ASTM C 55, Grade A.

Metal frames, grates, covers, and ladder rungs shall conform to the plan dimensions and to the following requirements for the designated materials:

- (a) Metal grates and covers that will rest on frames shall bear on them evenly. Assemble all units before shipment. Mark all pieces to facilitate reassembly at the installation site. Correct inaccuracies of bearings by matching.
- (b) One frame and the accompanying grate or cover to be used with it shall constitute one pair.
- (c) Uniformly coat all castings with asphalt varnish meeting the requirements of Federal Specification TT-V-51.
- (d) Gray iron castings shall conform to the requirements of AASHTO M 105. Strength class is optional.
- (e) Carbon-steel castings shall conform to the requirements of AASHTO M 103. Grade is optional.
- (f) Structural steel shall conform to the requirements of AASHTO M 183.
- (g) Galvanizing shall conform to the requirements of AASHTO M 111.
- (h) Malleable iron castings shall conform to the requirements of ASTM A 47. Grade is optional.
- (i) Aluminum alloy ladder rung material shall conform to the requirements of ASTM B 221, Alloy 6061-T6 or 6005-T5.
- (j) Aluminum castings shall conform to the requirements of ASTM B 26, Alloy 356.0-T6.
- (k) Joint filler shall be a hot-poured, elastic-type sealant conforming to the requirements of AASHTO M 173.

Joint mortar shall consist of one (1) part masonry cement or Portland Cement and two (2) parts fine aggregate by volume. The mortar shall have a minimum 28-day compressive strength of 2,100 psi when tested in accordance with ASTM C 780. The mortar shall have an air content of 15 percent \pm 3 percent when tested in accordance with AASHTO T 152 or AASHTO T 199.

Masonry cement for joint mortar shall conform to the requirements of ASTM C 91.

Portland cement for joint mortar shall conform to the requirements of AASHTO M 85.

Fine aggregate for joint mortar shall conform to the requirements of AASHTO M 45.

Water shall conform to the requirements of AASHTO M 157. The water shall contain no substances that would be detrimental to the finished product. Potable water of known quality may be used without testing.

Pre-cast concrete units shall conform to the following requirements:

Cast the units in substantial permanent steel forms. Structural concrete used shall attain a minimum 28-day compressive strength of 4,000 psi as determined in accordance with AASHTO T 22. When air-entrained concrete is specified, the concrete shall have an air content of 6 percent \pm 2 percent by volume. For units containing a concrete with a 3/8-inch maximum size coarse aggregate, the air entrainment is increased to 7 percent \pm 2 percent. Cure the units in accordance with AASHTO M 170. Provide additional reinforcement as necessary to provide for handling the pre-cast units.

Cracks in units, honeycombed or patched areas in excess of 3 square inches, and failure to meet strength requirements will be cause for rejection. Pre-cast reinforced concrete manhole risers and tops shall conform to the requirements of AASHTO M 199.

Deformed and plain billet-steel bars shall conform to the requirements of AASHTO M 31, Grade 60. Epoxy-coated reinforcing bars shall conform to the requirements of AASHTO M 284. Welded-steel wire fabric shall conform to the requirements of AASHTO M 55.

Repair damaged coatings in accordance with the applicable requirements of AASHTO M 36, Section 11.

Flexible watertight gaskets shall be ring gaskets conforming to the requirements of AASHTO M 198, Type A or Type B.

CONSTRUCTION REQUIREMENTS

Excavate as required for construction of the catch basins.

Concrete units may be cast-in-place or pre-cast.

Design and construct forms to be free of bulge and warp and to allow removal without injuring the concrete. Place reinforcing steel according to the "Manual of Standard Practice of the Concrete Reinforcing Steel Institute."

Use wood, metal, or other suitable material for forms. Keep forms clean and coat with a form release agent or form oil before placing concrete.

Place concrete to avoid segregation of materials. Consolidate with mechanical vibrators. Do not use aluminum pipe or conduit for transporting or placing concrete.

The intervals between delivery of concrete batches for a single pour on a structure shall not exceed 30 minutes.

When placing concrete at or below an atmospheric temperature of 35° F, provide procedures for placement and protection of the concrete to the COR for approval. The forms, steel, and concrete shall be maintained at 60° F or higher for the first six (6) days after placement. In hot weather, maintain the forms, steel, and concrete mixture below 90° F.

Cure concrete a minimum of seven (7) days, or if high early strength cement is used, a minimum of three (3) days by one of the following methods:

Waterproof Cover Method. Thoroughly wet the surface using a fog mist applicator. Entirely cover the surfaces with a waterproof cover. Lap the cover over the pavement at least 18 inches. Place the cover in complete contact with the surface. Use weights or other approved methods to maintain contact. Seal, sew, or cement lap the joints securely to prevent opening or separating while curing.

After curing, remove and replace or repair as approved all rock pockets or honeycombed concrete less than 3 square inches.

Begin finishing as soon as the forms are removed. Remove fins and irregular projections from all surfaces that are exposed or will be waterproofed. Remove bulges and offsets with carborundum stones or discs. Remove localized, poorly bonded rock pockets or honeycombed concrete and replace with sound concrete or packed mortar.

Thoroughly clean and carefully point all form tie cavities, holes, broken corners and edges, and other defects. Saturate the area with water. Finish the area with mortar that is less than one (1) hour old. After the mortar is set, rub it (if required), and continue curing. Match exposed surfaces to surrounding concrete.

Carefully tool and remove free mortar and concrete from construction and expansion joints. Leave joint filler exposed for its full length with clean, true edges.

Final finished surface shall be true and uniform.

When a pipe enters through an existing concrete wall, cut the concrete and steel reinforcement in a manner that will not loosen the reinforcement in the wall. Cut the steel reinforcement flush with the opening wall face. Grout all joints and openings cut in the wall.

Assemble pre-cast concrete catch basins with flexible watertight gaskets to form a flexible watertight seal. Handle pre-cast units carefully after the gasket has been affixed to avoid damaging the gasket or contaminating the joint. Take care to attain proper alignment before joints are forced home.

Grout all joints and openings to make them watertight. Finish mortar joints with a bead on the outside and a smooth finish on the inside. Accurately finish the channel's flowline in the catch basins to match the pipe flowline.

Set metal frames in a full mortar bed.

The types, sizes, and locations of manholes, inlets, and catch basins (as shown on the plans) are estimated only, and should not be ordered until exact sizes and locations are furnished in writing by the Contractor and verified by the COR.

Where inlet covers are located within or adjacent to exposed aggregate sidewalk, the inlet covers shall be constructed of exposed aggregate concrete that matches the color, character, and texture of the adjacent exposed aggregate sidewalk.

Where inlet covers are located in grass adjacent to granite curb, the concrete used for the inlet covers shall match the color, character, and texture of the granite curb. This concrete shall be similar to that used for the capstone for the pre-cast concrete guardwalls on the Baltimore-Washington Parkway between Riverdale Road and I-95. A copy of the mix design for that concrete is available as part of the bidder's information.

The Contractor shall submit two (2) sample test panels 14 feet by 4 feet by 6 inches. Materials used in the test panels shall be the same materials used in the work. After approval, the panels shall be retained, and all inlet covers shall match the approved test panels. Approved panels shall not be constructed to be part of the final inlet covers.

If the Contractor elects to pre-cast the concrete inlet covers, the Contractor shall submit the details of the proposed covers. All covers shall be capable of supporting an AASHTO H20 wheel loading. Computations shall be submitted to the COR, sealed by a licensed professional engineer.

An overflow elbow in triple inlet structures shall be constructed of corrugated metal pipe of the size indicated on the drawings, coated with asphalt inside and outside.

MASONRY BLOCK CONSTRUCTION .

Construct concrete footings. Construct block masonry plumb. Stagger vertical joints and set block with the cells vertical. Dampen block to reduce the rate of absorption. Batter bearing members and vertical joints full of mortar. Bond block with mortar on all sides. Construct joints straight, level or plumb, flush, and 1/4 to 1/2 inches thick. Backfill the structure after the masonry block has cured for at least seven (7) calendar days.

Backfill in 6-inch lifts and compact each lift to the required grade.

U



Drinking Fountains

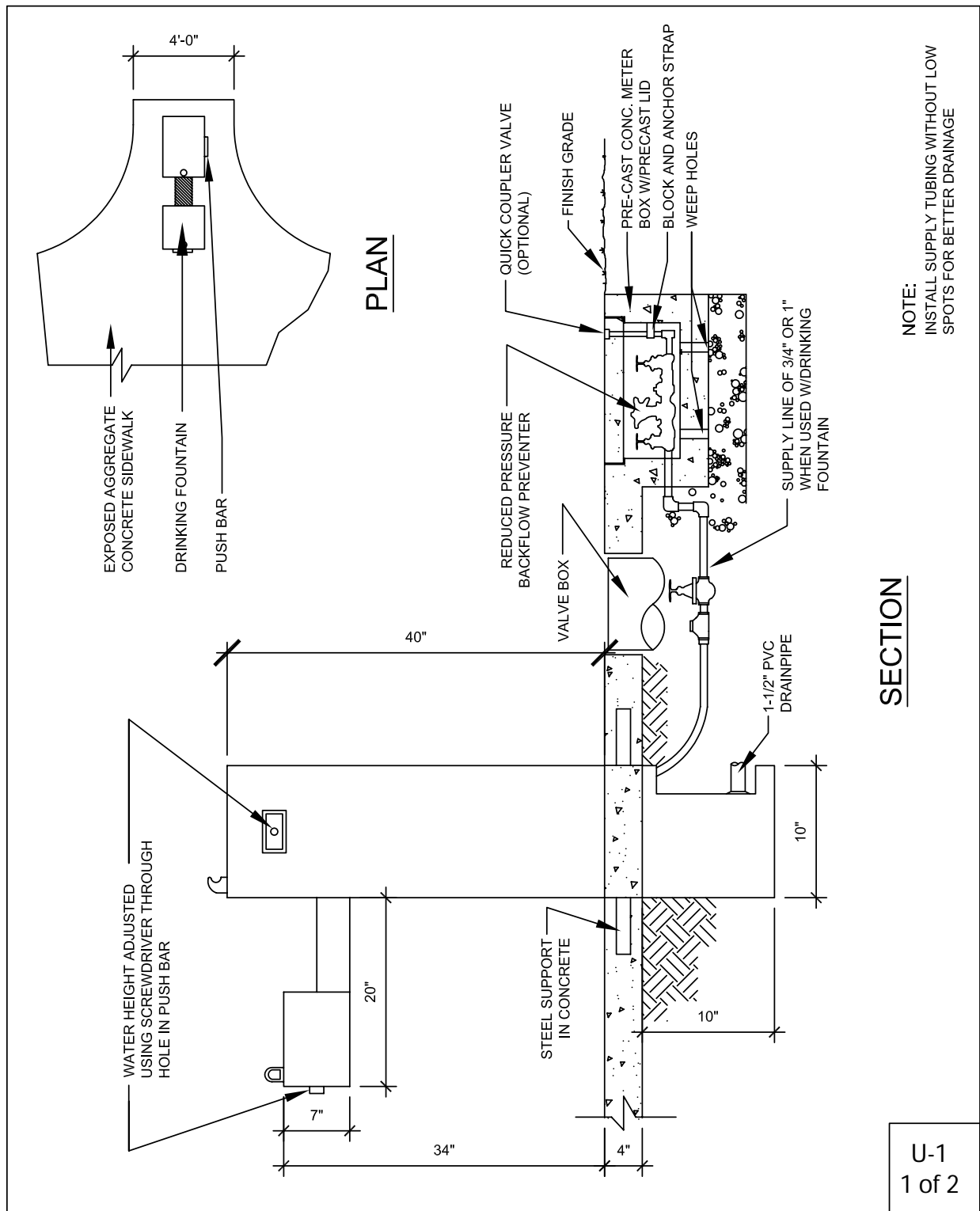


Figure 21: Handicapped Accessible Freeze-Resistant Drinking Fountain Detail

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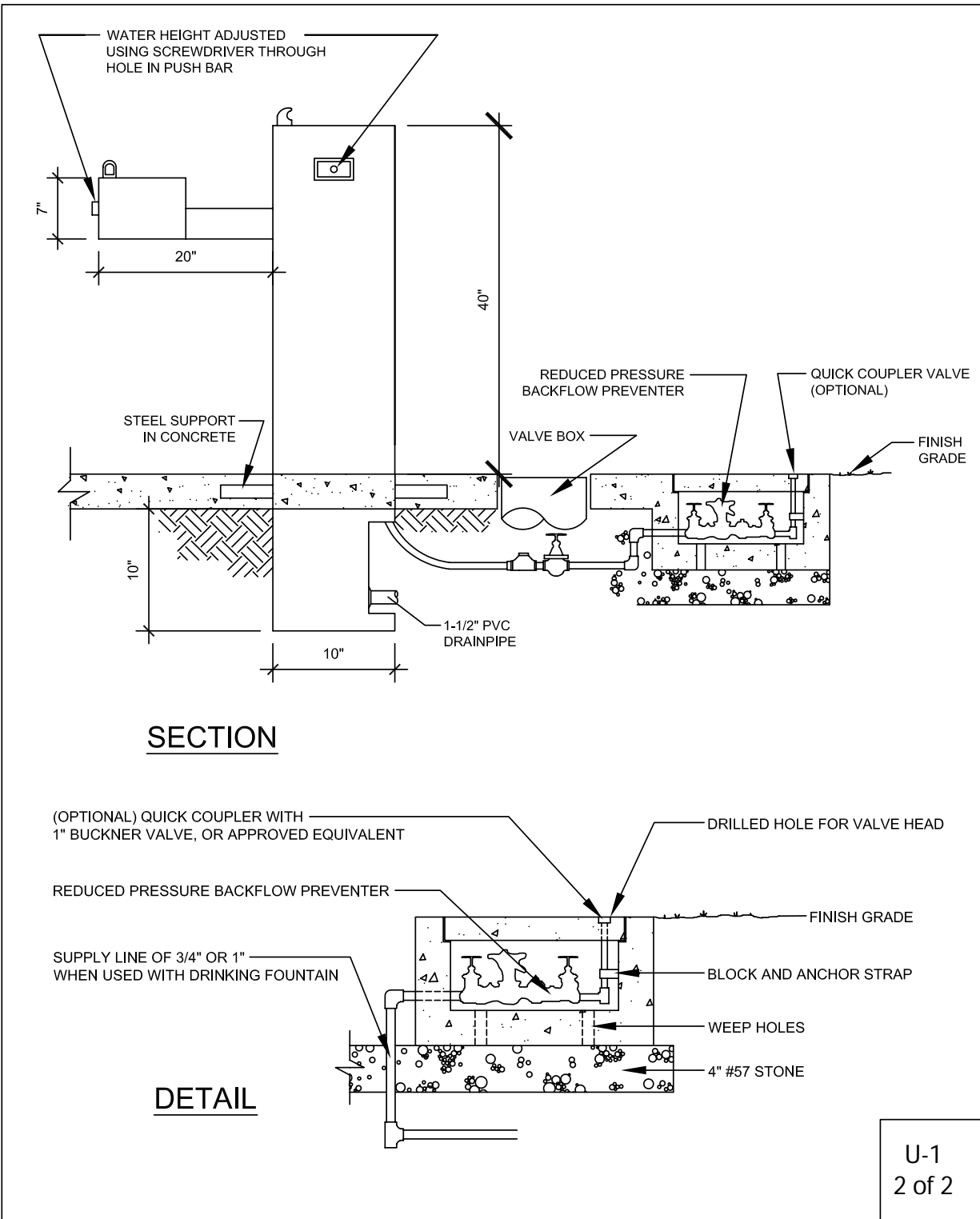


Figure 22: Drinking Fountain With Quick Coupler Detail

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U-2

HANDICAPPED-ACCESSIBLE (FREEZE-RESISTANT) DRINKING FOUNTAIN SPECIFICATIONS

DESCRIPTION

This work consists of constructing handicapped-accessible drinking fountains.

MATERIAL

The drinking fountain shall be a Most Dependable Fountains (MDF) 440 Dual Brown Tone, or approved equal.

The fountain shall be wheelchair accessible, freeze-resistant, and suitable for outdoor installation. The fountain shall have a front push button-operated valve, an automatic stream regulator, a vandal-resistant bubbler, a 1/2-inch iron pipe size (IPS) screwdriver stop, and a 1 1/4-inch outside diameter waste ell.

The pedestal shall have a top access plate held in place with vandal-resistant screws, and a 12-inch square mounting base.

The receptor shall be stainless steel with No. 4 satin finish.

The pedestal, base plate, and bracket shall be dark brown powder coat baked on polyurethane enamel steel.

The push button and bubbler shall have a polished, chrome-plated finish.

The valve system shall be freeze-resistant.

The pipe for connection to water system shall be threaded copper.

All valves, valve boxes, and backflow preventers shall be heavy-duty type, municipal grade. Submit catalog cuts to the Contracting Officer Representative for approval.

Gravel shall conform to the requirements of ASTM C 33, Size 57, or equivalent.

CONSTRUCTION REQUIREMENT

The Contractor shall notify Miss Utility 48 hours before any excavation or construction, to have the utilities marked in the field.

The Contractor shall exercise special care and extreme caution to protect utilities and avoid damage to any utility company facilities. Existing utilities have been generally located and shown on the plans as they are believed to exist; however, the Government assumes no responsibility for the accuracy of said locations.

The Contractor shall be responsible for locating all existing utilities and ensuring the safety of same. The Contractor shall make good at his/her own expense any damage caused by his/her operations.

The Contractor shall locate by test any utility that may be in conflict with the proposed work. If a conflict appears to exist, the Contractor shall notify the Engineer immediately and provide information on the location and elevation of the utility so that the Engineer can adjust the proposed work.

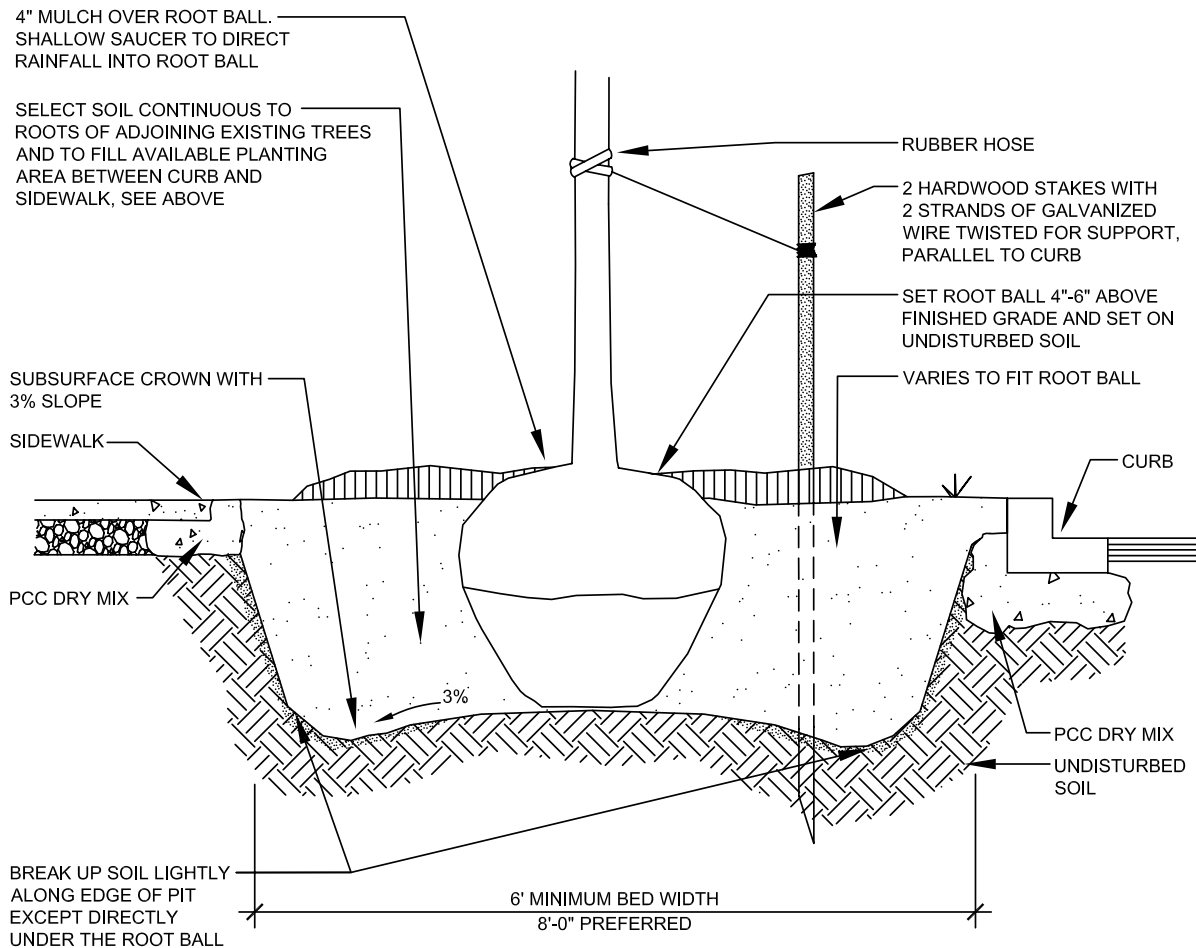
V, W



Tree Planting

NOTES:

- o TEST SOIL FOR PERCOLATION BEFORE CONSTRUCTION TO DETERMINE WHETHER UNDERDRAIN IS REQUIRED. IF IT IS REQUIRED.
- o THE DESIRED SPACING OF STREET TREES IS 50' O.C. BUT THIS SHOULD BE ADJUSTED TO REFLECT SITE-SPECIFIC DESIGN CONSIDERATIONS
- o USE THIS DETAIL WHEN PLANTING ONE OR TWO NEW TREES
- o SEE DETAIL U-1, 2 OF 2, FOR MORE INFORMATION
- o STAKES SHALL NOT PIERCE ROOT BALL



V/W-1
1 of 1

Figure 23: Individual Tree Replacement Detail

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V/W-2, 1 of 4

TREE PLANTING SPECIFICATIONS

DESCRIPTION

SCOPE .

This work shall consist of providing all materials, labor, equipment, tools, and services necessary to complete the installation of trees in accordance with the specifications and drawings herein. Therefore, any items not specifically noted, but necessary for a complete installation, shall be furnished under this contract.

All planting locations shall be prepared in accordance with the specifications herein and as shown on the drawings.

The COR will identify the planting locations and method of planting by staking, flagging, painting, or marking as otherwise required.

The Contractor shall notify the COR of the source(s) of all plant materials within fourteen (14) days after the award. The COR reserves the right to inspect and tag trees at the source before delivery to the site.

All approvals will be in writing.

WORK AREA.

Contractors shall confine the work, the storage of materials and equipment, the parking of vehicles, and all other operations in connection with this contract to the areas approved by the COR. The public ways shall not be encumbered with any of the above. Unusual traffic situations shall not be created by reason of operations under this contract without special permits obtained by and at the expense of the Contractor from cognizant local officials.

LAYOUT OF WORK.

Final grades and all planting locations shall be subject to adjustment and approval on site with the concurrence of the COR or designated representative.

HEAVY EQUIPMENT .

The Contractor shall not permit heavy equipment or vehicles or the stockpiling of heavy materials in the desired root protection area. Any damage resulting from such practices shall be made good to the satisfaction of and without additional expense to the Government. The root protection area is defined as an area equal to a radius of 1 1/2 feet for each inch of diameter at breast height (dbh) (that is, a 10 inch dbh tree will require protection of 15 feet from the main trunk in all directions).

Limited activity of this sort may take place with the expressed permission of the COR in areas determined to be safe from excessive damage; however, under no conditions shall this activity take place within the root protection area without mitigation to protect the tree trunk and roots. If construction activities are to take place within the desired root protection area, before any construction begins, the tree trunks must be protected with protective fence and the entire root protection area must be covered with a geotextile fabric and mulched with a minimum of 45 inches of wood chips. Metal plates, pruning, fertilization, aeration, and irrigation may also be required if directed by the COR.

RESPONSIBILITY REGARDING EXISTING PLANT MATERIAL AND OTHER LANDSCAPE FEATURES .

The Contractor shall preserve and protect all existing vegetation, such as trees, shrubs, and grass on or adjacent to the site, which do not reasonably interfere with the construction. Trees and shrubs that may be subject to construction activities within the root protection area shall be boxed and protected with chain link or wood fencing material as directed by the COR. The Contractor shall be responsible for all unauthorized cutting or damage to trees and shrubs, including damage resulting from careless operation of equipment, stockpiling of materials, or tracking of grass and other surfaced areas by equipment. Such damaged areas or materials shall be restored, repaired, or replaced by the Contractor, as directed by the COR, at no expense to the Government before Initial Acceptance. For more information, see Specification V/W-2, 2 of 4, Plant and Soil Protection, at the end of this Specification.

PATCHING OF PUBLIC SIDEWALKS , CURBS , GUTTERS , AND STREETS .

The Contractor shall patch, repair, or replace portions of sidewalks, curbs, gutters, streets, man-holes, and the like that are damaged in connection with work under this contract or as a result of operations thereunder. Materials and methods shall conform to the current standards for the area damaged, match existing on-site materials, and shall meet the approval of all cognizant officials and the COR. All damaged areas shall make smooth, satisfactory, and imperceptible transitions to existing adjacent work, and transitions shall be performed without additional expense to the Government.

RESPONSIBILITY REGARDING EXISTING UTILITIES AND STRUCTURES .

The existence and location of underground utilities on the plans are not guaranteed and shall be investigated and verified in the field by the Contractor before starting work. Excavation in the vicinity of existing structures and utilities shall be carefully performed. The Contractor will be held responsible for any damage to, and for maintenance and protection of, existing utilities and structures. To locate utilities in the field, contact Miss Utility forty (40) hours in advance of commencing work.

SALVAGE .

The Government reserves the right to salvage any and all materials from work areas for use elsewhere before construction begins. If such materials have not been removed before the first day of construction, the Contractor may proceed with no responsibility for salvage.

WARNING SIGNS .

The Contractor shall provide, erect, and maintain all necessary barricades, traffic cones, suitable and sufficient red lights, and warning and danger signals and signs, and provide a sufficient number of watchmen and flagmen to ensure the safe flow of traffic, protection of the work area, and safety of the public in accordance with "Work Zone Traffic Control, Standards and Guidelines," U.S. Department of Transportation, FHWA.

All open excavations shall be barricaded overnight, and warning lights shall be clearly visible. All roadways must remain open to the public unless closure is approved by the COR.

AIR AND WATER POLLUTION CONTROL .

The Contractor shall take all necessary measures to prevent soil erosion and air and water pollution by any material and/or equipment used during construction. The Contractor shall keep the site clean and free of trash and debris, including, but not limited to, loose construction and materials such as sand, cement, lime, wood pieces, building paper, and so on. The Contractor shall place all trash and debris in approved containers. These containers shall be removed from the site daily to a location where it will not be possible for water to reach them or for debris to be dispersed in

any way. No burning of trash or debris will be permitted on site. When excavation, obliterations, and demolitions are made, resultant loose earth and debris shall be immediately disposed of, off the site, unless otherwise specified.

CLEANUP AND RESTORATION .

The Contractor will be required to furnish all labor, materials, and equipment for daily cleanup and restoration of all disturbed areas or features that have been damaged during the course of work. If so directed, the Contractor shall be prepared to sweep and wash paved surfaces daily or as needed. The Contractor shall also be responsible for replacing all damaged turf areas to the satisfaction of the COR.

MATERIAL

IMPORTED TOPSOIL .

- a. Topsoil shall be natural surface soil, in a friable condition and contain less than 3 percent subsoil. The topsoil shall be free of hardpan material, stones and clods larger than 1 inch in diameter, sticks, tree or shrub roots, debris, toxic substances (i.e., residual herbicides), and other material detrimental to plant growth. The area and the topsoil shall be free of undesirable plants and plant parts such as, but not limited to, Bermuda grass, nut sedge, mugwort, Johnson grass, quack grass, Canada thistle, or noxious weeds as set forth in the Federal Seed Act.
- b. The Contractor shall notify the COR of the location of all sources of the topsoil and furnish the COR with a certified report from the agricultural experiment station or approved agricultural laboratory of an analysis performed not more than sixty (60) days before the date of submission. The topsoil shall be certified to meet the following requirements:
 - (1) Shall be a natural, original surface soil of a sandy loam texture with a mechanical analysis of 60–65 percent sand, 15–25 percent silt, and 10–15 percent clay.
 - (2) Shall have at least 2 percent, but not more than 5 percent, organic matter.
 - (3) Soil pH shall be 5.5 to 6.5 inclusive unless otherwise specified.
 - (4) Soil salinity by electrical conductivity measurement shall not exceed 600 parts per million (ppm) as determined by Black, Editor, "Method of Soil Analysis," Part 2, published by the American Society of Agronomy, 1965.
 - (5) The soil nutrient level shall be greater than 100 lbs/acre of magnesium, 150 lbs/acre of phosphorous, and 120 lbs/acre of potassium.
- c. Agricultural limestone at not more than 5 pounds per cubic yard of topsoil may be used to adjust an acidic condition and shall be thoroughly mixed by volume.
- d. Topsoil that has been synthesized by blending materials that individually do not meet the requirements of this specification will not be accepted even though the resulting blend meets the organic matter, mechanical analysis, pH, and soluble salts requirements.
- e. The COR reserves the right to inspect and sample all topsoil at the source and at the time of delivery. These inspections will be made without cost to the Contractor.
- f. Topsoil must not be delivered or handled in a frozen or muddy condition.
- g. All soil must be approved by the COR before delivery to the site. Any materials not meeting the requirements of this specification will be rejected on or after delivery.

COMPOSTED PINE BARK

Pine bark shall be "ProBase" as available from Summit Inc., P.O. Box 89, Lewisburg, North Carolina, 27549 (1-800-334-6621), or an approved equivalent, and shall meet the following specifications: 10096 passing the 1/2"-inch sieve, a pH between 4 and 4.6, and soluble salts measured by electrical conductivity shall be 0.10 - Ommho/cm.

SCREENED LEAF MOLD

As available through Maryland Environmental Services, 2020 Industrial Drive, Annapolis, MD 21401 (301/261-8596), or approved equal, completely composted and free from all materials such as glass, paper, plastics, and so on. Composted sewage sludge shall not be used.

SOIL MIX AGGREGATE

Aggregate shall be Solite #388 as manufactured by Solite Corp., 2508 Chamberlayne Avenue, Richmond, Virginia, or approved equal. Lightweight aggregate shall be expanded shale, clay, or slate expanded by the rotary kiln process. The aggregate shall meet the requirements of the American Society of Testing Materials, ASTM C 331-81 and C 333-80.

BACKFILL

a. When existing soil is acceptable for use, adhere to the following requirements:

Existing topsoil shall not be used unless approved by the COR. When approved for use, the following mixture in accordance with the specifications herein, thoroughly mixed by volume, shall be used as backfill:

- (1) Six (6) parts existing soil
- (2) Two (2) parts leaf mold or composted pine bark as approved by the COR
- (3) Two (2) parts Solite #388

b. When existing soil is not acceptable for use, adhere to the following requirements:

Existing soil that is not acceptable for use shall be excavated and disposed of off site. The following mixture, thoroughly mixed by volume in accordance with the specifications herein, shall be used for backfill:

- (1) 65 percent sandy loam topsoil
- (2) 25 percent Solite #388
- (3) 10 percent composted pine bark or leaf mold

Backfill shall be mixed off site. If requested, backfill shall be mixed in the presence of the COR. Backfill must be approved by the COR before delivery to the job site.

GROUND LIMESTONE

Ground limestone shall be calcic or dolomitic agricultural ground limestone containing at least 85 percent of total calcium and magnesium carbonates with 40 percent passing the No. 100 sieve and 95 percent passing the No. 8 sieve.

PLANT MATERIALS

a. All plants shall be supplied from nurseries within U.S. Department of Agriculture (USDA) Plant Hardiness, Zone 6 or 7, and shall meet all requirements and recommendations of the American Standard for Nursery Stock., (ANSIZ.60.1), sponsored by the American Association

of Nurserymen, Inc, 1250 I Street, N.W., Suite #500, Washington, DC 20005, in effect on date of Invitation for Bid.

- b. All balled and burlapped (B&B) plants must meet the standards described under "Recommended Balling and Burlapping Specifications" of the American Standard for Nursery Stock. Specifically: dug by hand or with a mechanical tree digger in good condition, free of any hydraulic leaks, with all blades aligned and free of damage; wrapped firmly with untreat - ed burlap; and bound carefully with untreated sisal or jute twine, cord, or ungalvanized wire mesh, in a manner that does not damage the bark, break branches, or destroy the natural shape. The caliper measurement is determined by taking the average of two trunk caliper measurements at right angles 6 inches above the root crown.
- c. All plants must be inspected and certified at the nursery and/or growing site by authorized Federal and State authorities or inspectors as required by Bureau of Entomology and Plant Quarantine, USDA, Washington, D.C., for necessary transportation of same, before removal from the State or district in which the nursery and/or growing site is located. Each shipment, invoice, or order of stock must be declared and certified free from disease of any kind. All necessary inspection certificates must be filed with the COR before acceptance and payment.
- d. The genus, species, and cultivar names shall agree with the nomenclature of the most current edition of "Hortus Third" by L. H. Bailey, Hortorium, Cornell University.
- e. The COR reserves the right to inspect, select, and tag all plants before they are dug or delivered to the job site. This inspection, if made, shall be at the nursery or growing site by the Government without cost to the Contractor.
- f. Shipment and delivery.
 - (1) The Contractor shall notify the COR, 48 hours in advance, when plants are to be delivered to the site and the method of shipment, and shall furnish an itemized list of actual quantity and sizes.
 - (2) All plants must be protected from weather and adequately packed to provide protection against climate and breakage during transit. When the shipment is made by open vehicle, plant materials must be tied and covered to avoid windwhipping and dehydration. Evergreen and deciduous trees in leaf should be sprayed with an antitranspirant in accordance with the manufacturer's instructions to afford protection from drying. When the shipment is made by closed vehicle, plants must be carefully packed and adequately ventilated to prevent "sweating" of plants during transit.
 - (3) Care must be exercised at all times during the handling operations to prevent damage to bark, branches, and root system and to preclude cracked plant balls. Plants shall not be planted if the ball is cracked or broken either before or during planting operation. All root balls greater than 36 inches in diameter must be platformed.
 - (4) Plants must be protected upon arrival at the site by being thoroughly watered and properly maintained until planted by covering them with moist soil, leaf mold, or mulch (including use of an approved antitranspirant), unless planted within 24 hours of delivery.
 - (5) All plants shall be labeled. Labels shall be durable and legible stating the correct botanical name and size in weather-resistant ink or embossed letters. Labels shall be securely attached to each tree in a manner that will not restrict growth. Labels shall remain on the tree to be removed by the COR at initial acceptance.
 - (6) Plants shall not be planted until inspected and approved by the COR. Trees not meeting specifications for quality stated herein, or plants that show improper handling or arrive

on site in unsatisfactory condition shall be rejected. All rejected trees shall immediately be removed and disposed of off site by the Contractor and shall be replaced with approved nursery stock of the designated variety, size, age, and so on, as specified under this contract without additional compensation.

g. Substitutions.

It is the Contractor's responsibility to locate the plants specified. In the event the material has become unavailable, the Contractor is responsible for written documentation of availability problems. If a substitute is to be used, it must be approved by the COR.

GRASS SEED AND SOD

- (1) For specifications regarding grass seed, see Specification V/W-2, 4 of 4.
- (2) For specifications regarding sod, see Specification V/W-2, 3 of 4.

FERTILIZER

Tree fertilizer. Slow release, soluble 16-8-16 analysis designed to last for 5–8 years contained in polyethylene perforated bags with micropore holes for feeding such as Easy Grow as manufactured by ADCO Works, P.O. Box 310, Hollis, N.Y. 11423 or approved equal.

MULCH

Shredded hardwood mulch shall be aged; dark brown to black in color; contain less than 15 percent wood content measured as a percentage of wood to total product weight; particle size less than 3 inches; a neutral pH; and free of sticks, stones, clay or any other matter injurious to plant growth.

ANTITRANSPIRANT

Wilt-Pruf, as manufactured by Nursery Specialty Products, Inc., 203 East 475th Street, New York, NY 10017, or approved equal.

SUPPORT STAKES

Support stakes shall be rough cypress, hard pine, cedar, oak, or locust, free from unsound or loose knots and rot and from injurious cross grain and sapwood or any other defect; 2 inches by 2 inches by 8 feet, pointed on one end, and painted or stained a dark brown color approved in advance by the COR.

GUYS

Guys shall be 12-gauge, annealed, zinc-coated wire, enclosed in rubber garden hose (minimum diameter of 1/2 inch) where they come in contact with tree trunk or branches. Hose shall be all one color, black or dark green, as approved by the COR.

CONSTRUCTION REQUIREMENTS

GENERAL .

- a. Planting locations shall be as shown on plans or as designated by the COR.
- b. Remove existing trees or shrubs to be replaced in their entirety, including stump and roots, and dispose of off site.
- c. All tree planting locations shall be dug with circular outlines with the sides vertical and the bottom flat, except as noted. Sidewalls shall be roughened and not glazed. All rocks, debris, and excavated soil not approved for reuse shall be removed and disposed of off site.

- d. No holes will be allowed to remain open; barricade or rope off beds or holes left open in a manner approved by the COR for the protection of the public.
- e. All tree pits shall be approved by the COR before planting.
- f. Conduct planting operations under favorable seasonal conditions throughout the period of this contract, as determined by the COR. Do not install trees during adverse weather or during periods when soil conditions are unfavorable as determined by the COR. Should the COR allow planting during the season when deciduous plants are in foliage, plants shall be sprayed with an antitranspirant. Method and rate of application shall be in accordance with the manufacturer's recommendations.
- g. Soil shall be handled in a slightly moist condition. Do not place topsoil when ground is frozen, excessively wet, or in such a condition that the soil cannot be worked easily and dressed smoothly.
- h. The Contractor shall make adjustments and corrections in the locations of the proposed planting, as may be required by the COR, without additional cost to the Government.
- i. All trees shall be handled only by the earth ball. Handling by the trunk or branches will be cause for rejection of that plant. All earth balls shall be firm and undamaged. Cracked or crushed earth balls shall be rejected.

TREE SPACES

- a. Planting.
 - (1) All tree planting holes shall be excavated to the existing undisturbed soil, 1 foot wider than the root ball in all directions. Trees shall be set so that the root ball rests 46 inches above grade. A compacted pedestal, as shown on the drawings, shall be constructed so that the root ball will remain at the proper height and will not settle. The pedestal shall be compacted to a density of not less than 95 percent.
 - (2) After the holes have been prepared and approved by the COR, the trees shall be set to a height of approximately 4 inches above the depth at which they grew in the nursery. Upright plants shall be kept in a vertical position. All plants shall be handled only by the earth ball. Handling by the plant stem or foliage will be cause for rejection of that plant. All earth balls shall be firm and undamaged. Cracked or crushed earth balls shall be rejected.
 - (3) Backfill with prepared mixture as specified under BACKFILL, tamping at 12-inch intervals to fill voids around the root ball.
 - (4) When the pit is half full, place fertilizer in accordance with the manufacturer's recommendations.
 - (5) After filling two-thirds (2/3) up the earth ball, cut and remove the wire mesh one-third (1/3) of the way down from the top of the root ball. Cut all twine and lay the burlap back off the top of the ball. Do not remove or pull the burlap and twine out from under the ball. Cut the excess off one-quarter (1/4) of the way down from the top. Backfill the balance of the pit and tamp around the root ball.
 - (6) The backfill shall be saucer-shaped, 3 to 4 inches above the existing grade to catch and retain water, and shall have a diameter equal to that of the planting pit. The backfill in holes on a slope shall be built up on the lower side only so that the basin can catch and hold water. The tops of the root balls shall not be covered with backfill.

b. Watering.

All plants shall be thoroughly watered immediately after planting, even if it is raining, to ensure that the soil is brought to field capacity. This shall mean a full and thorough saturation of all backfill in the pits during the same day of planting. To avoid air pockets and injury to the roots, apply water only by open-end hose at a very low pressure. No air pockets shall be left around the roots of any plants. When planted, watered, and fully settled, the plants shall be vertical.

c. Mulching.

Mulch shall be placed no later than 24 hours after any planting and shall be applied uniformly to cover the saucer-shaped area of the individual plants beyond the stakes to a loose measurement depth of 3 inches. No mulch shall be applied around the trunk of the tree.

d. Staking.

- (1) Support trees with two 6-inch by 2-inch by 2-foot stakes driven at equal spaces around the outside perimeter of the tree pit and to sufficient depth to hold trees rigid. Stakes shall be driven at an angle and drawn to vertical. NOTE: Stakes driven through the root ball shall be cause for rejection.
- (2) Cut pieces of green or black 1/2-inch rubber garden hose long enough to extend 2 inches past the trunk of the tree when wrapped around it. Place the hose around the trunk at the appropriate height to provide maximum support. Thread 12-gauge wire through the hose and pull both ends horizontally beyond each stake by about 2 feet.
- (3) Cut the ends of the wire and twist the wire at the rubber hose to keep it in place. Wind both ends of the wire together around the stake twice and then twist the wire back onto itself to secure the wire within 2 to 8 inches of the top of the stake. Cut off excess wire. For best establishment, there should be a 1- to 3-inch sway in the tree (i.e., the wires should not be pulled tight).
- (4) Paint stakes with dark brown paint or stain approved in advance by the COR.
- (5) Trees shall be staked no later than 48 hours after planting.

e. Pruning.

Any necessary pruning shall be done after the trees are in place to remove any broken or damaged limbs, below the point of injury, with due regard for the natural form and growth characteristics of the species. The main leader is not to be cut. If so directed by the COR, trees shall be further thinned to reduce up to 30 percent of the crown, and the lower branches shall be elevated to a minimum of 7 feet. If side branches are cut, all cuts are to be just outside the branch collar (the swollen base of the branch) to encourage wound closure.

f. Tree support.

Trees shall be supported with two guys on either side of the trees parallel to the roadway, and installed so that there is a 1- to 3-inch sway in the tree after tightening. Hose shall be placed around the trunk at the lowest stout branch and cut to extend 2 inches past the trunk when wrapped around it. All guys shall be flagged with surveyor's flagging tape or approved equal.

V/W-2, 2 of 4

PLANT AND SOIL PROTECTION SPECIFICATIONS

DESCRIPTION

This work consists of constructing or installing protective devices (such as fences, barricades, geotextiles, and wood chips or gravel over geotextile fabric) to protect trees, lawns, and the soil where vegetation is or will be planted from harm caused by the principal or incidental work of this contract. Incidental work, use, or operations are defined as, but not limited to, such things as storage, staging, temporary offices, access, and parking.

This work also includes removal of these items.

MATERIAL

Geotextile fabrics may be woven or nonwoven and shall consist only of long chain polymeric filaments or yarns such as polypropylene, polyethylene, polyester, polyamide, or polyvinylidene-chloride formed into a stable network such that the filaments or yarns retain their relative position to each other. The geotextile shall meet the FHWA Standards for Medium Separation Survivability.

Wood chips shall be shredded hardwood mulch. Particles shall not exceed 1/2 inch by 6 inches and shall have a uniform texture free of soil, stones, weeds, sticks, clay, or other material undesirable for plant growth.

Gravel shall be FHWA Grade B, C, or D, aggregate base. Grade C is preferred.

Protective fencing shall be plastic, wood, or chain link. Plastic or wood fencing shall be of a highly visible color.

Barricades shall be portable concrete safety shape barrier (Jersey barrier) or other semifixed vehicle resistant barrier, Type III, as approved by the COR.

CONSTRUCTION REQUIREMENTS

Protection of specimen trees shall consist of the following:

- a. No incidental work will be permitted within the Root Protection Area, which is defined as the area within the dripline of the tree or a circle with a radius in feet equal to 1 1/2 times the diameter breast high in inches, whichever is greater.
- b. A circular enclosure of fencing shall be erected around the tree. If there will be vehicular traffic adjacent to the tree, the fencing shall be supplemented with a barricade appropriate for the vehicles.
- c. When the principal work is within the Root Protection Area, that work shall be confined to the smallest possible area and done as quickly as possible. The area not involved with the principal work shall be fenced and/or barricaded as described above. At the completion of this work, the entire Root Protection Area shall be barricaded as described above.

Protection of other trees shall consist of the following:

- a. Principal work in the vicinity of other trees shall be the same as for specimen trees.

- b. Light-duty incidental use, such as short-term storage of light material or replacement plant material, may be permitted if the following is accomplished:
 - (1) A barricade is erected around each tree at a distance of not less than 5 feet from the trunk;
 - (2) Geotextile fabric is installed from that barricade to at least the Root Protection Area, as described above; and
 - (3) A minimum cover of 4 inches of wood chips is maintained over the geotextile fabric.

Protection of shrubs shall consist of the following:

- a. A complete enclosure of fencing shall be erected around the shrubs, 3 feet beyond the dripline or cultivated area, whichever is larger. If there will be vehicular traffic adjacent to the shrub area, the fencing shall be supplemented with a barrier appropriate for the vehicles.

Protection of lawns shall consist of the following:

- a. Light-duty use, such as short-term storage of light material or replacement plant material, may be permitted if the following is accomplished:
 - (1) Geotextile fabric is installed over the entire area to be used, and
 - (2) A minimum cover of 4 inches of wood chips is maintained over the geotextile fabric.
- b. Other use may be permitted if the following is accomplished:
 - (1) Geotextile fabric is installed over the entire area to be used, and
 - (2) A minimum cover of 4 inches of gravel is maintained over the geotextile fabric. Heavy use or unstable soils will require additional gravel; the amount shall be determined by the COR.

Cleanup shall consist of the following:

- a. When work has progressed to the point that these areas are no longer needed for incidental work, all gravel, wood chips, and geotextile fabrics shall be removed.
- b. Fences and barricades can be removed at this stage if they interfere with the landscaping or if removing them later will put the turf or other landscaping at risk.
- c. All fencing, barricades, geotextile fabrics, gravel, and wood chips shall be removed before final acceptance.

Restoration shall consist of the following:

- a. Under trees in root protection areas.

Verify all areas that have been subject to incidental work, or any other use, with an approved coring or shattering-type aerifier. Disc, verticut, or de-thatch the soil so that the upper 1 to 2 inches of soil is suitable for seeding or sodding, as specified.

- b. Lawn and other areas.

Light-duty use.

- (1) Loosen soil to a depth of 7 inches.
- (2) Re-establish turf as specified for seeding or sodding as appropriate.

Other use.

- (1) Loosen soil to a depth of not less than 6 inches with a scarifier or other approved cultivator that does not move the soil from the bottom to the top of the cultivated zone.
- (2) Re-establish turf as specified in V/W-2, 3 of 4, Soil Modification, Topsoil, and Sodding Specifications.

V/W-2, 3 of 4

SOIL MODIFICATION, TOPSOIL, AND SODDING SPECIFICATIONS

DESCRIPTION

This work shall include preparing the subgrade and sod bed, laying sod, and performing maintenance.

MATERIAL

Compost and imported topsoil shall conform to specifications for Street Tree Planting Specification.

Existing topsoil shall consist of natural, fertile, agricultural soil that is free from subsoil, slag, clay, stones, lumps, plants, roots, sticks, crabgrass, noxious weeds, and foreign matter, if approved for use by the COR.

Existing turf may be shredded and mixed into the existing topsoil, provided that it is mixed to a depth of at least 6 inches and does not interfere with subsequent operations and is not within the root zone of existing trees to remain.

Sod shall conform to the following requirements:

- a. Machine cut at uniform soil thickness of 3/4 inch, +/- 1/4 inch, excluding top growth and thatch. Cut individual pieces at least 12 inches wide and of a length such that each piece is at least 1/2 square yard. Maximum allowable deviation from standard width is 5 percent.
- b. Broken pieces and torn or uneven ends will not be accepted. Each piece of sod must be strong enough to support its own weight and retain its size and shape when suspended vertically from a firm grasp on the upper 10 percent of the piece. Netted sod is not acceptable.
- c. Each load of "Certified Sod" or "Certified Turf" shall be accompanied, in the same vehicle, by an official certification label. That label must be attached to a dated invoice, bill of lading, or labeling information document.
- d. Certified turf-type tall fescue sod shall be living "Certified Sod" or "Certified Turf" grown from a mixture of one or more varieties of tall fescue seed and Kentucky bluegrass seed that meets the certification requirements published by the extension services of the University of Maryland or Virginia Polytechnic Institute and State University.

Fertilizer shall be a standard commercial mix of 10-10-10 grade, FS O-F-241, containing 10 percent nitrogen, 10 percent phosphoric acid, and 10 percent potash; uniform in composition; and a dry and free-flowing material suitable for application by a common fertilizer distributor or other approved equipment.

Lime shall be finely ground agricultural limestone, 90 percent calcium carbonate equivalent, conforming to standards of Association of Official Agricultural Chemists (AOAC), and with a sieve analysis such that at least 98 percent passes a No. 20 mesh sieve and 75 percent passes a No. 100 mesh sieve.

DELIVERY, STORAGE, AND HANDLING OF MATERIAL.

Screened Compost: Deliver in dry, unfrozen, completely composted condition.

Topsoil: Deliver in dry, unfrozen condition.

Sod: Harvest and deliver within a period of 24 hours and keep moist until placement.

Fertilizer: Deliver in unopened waterproof bags showing weight, chemical analysis, and name of manufacturer. Store in a manner to prevent wetting and deterioration.

Lime: Deliver in unopened waterproof bags showing weight, composition, texture, and name of manufacturer. Bulk lime may be approved by the COR provided the same information is included on the bill of lading. Store in a manner to prevent wetting and deterioration.

SUBMITTAL

Submittals shall consist of material certification and test results for the following:

TOPSOIL .

- a. Location of all sources.
- b. Certified report of chemical analysis from a State Agricultural Experiment Station or approved agricultural laboratory, performed not more than sixty (60) days before the date of submission, including acidity, salinity, fertility, texture, and recommended rate of application of lime and fertilizer to imported and existing topsoil to sustain turf growth.
- c. The right is reserved to inspect and sample all topsoil at the source and at the time of delivery. These inspections shall be made without cost to the Contractor.

"CERTIFIED SOD " OR "CERTIFIED TURF ".

- a. Official certification label and dated invoice, bill of lading, or labeling information document.

FERTILIZER AND LIME.

- a. Certification of chemical composition.

INSTALLATION

Installation of sod shall conform to the following requirements:

Preparation of Subgrade (where topsoil has been removed, buried, or is nonexistent):

- a. Protect existing underground improvements from damage.
- b. Remove contaminated subsoil.
- c. Thoroughly till areas to be sodded to a 6-inch minimum depth.
- d. Remove foreign materials, plants, roots, stones, and debris greater than 1 inch in diameter and dispose of off site. Do not bury foreign materials.
- e. Leave the entire area drainable and free from abrupt changes in slope.

PREPARATION OF SOD BED

- a. Perform work during dry weather and on dry, unfrozen subgrade.
- b. After lawn areas with exposed subsoil have been tilled, spread stockpiled topsoil and supplement with imported topsoil to a minimum total depth of 4 inches.

- c. Cultivate areas where existing topsoil has been left in place to a depth of 5 to 7 inches.
- d. Apply lime evenly at the rate determined by soil testing and work the lime into the top 3 inches of the soil with a disc harrow or other approved equipment.
- e. If compost is specified, cultivate to a depth of 6 to 9 inches so that compost is incorporated and soil is thoroughly pulverized.
- f. Grade the finished surface of the sod bed to a smoothness comparable to results obtained by hand raking, leaving it clean and free of stones, debris, and depressions.
- g. Blend the final grade with existing adjacent ones. Leave the entire area drainable and free from abrupt changes in slope.
- h. After preparation of finished surface, apply fertilizer evenly at rate of 10 pounds per 1,000 square feet and lightly rake into top 1 inch of soil.

LAYING SOD

- a. Do not lay sod until prepared sod bed has been approved by the COR.
- b. Lay sod within 12 hours after delivery to prevent deterioration.
- c. Do not lay sod during freezing weather, when the sod or ground is frozen, or when the areas to be sodded are too wet or too dry.
- d. Place sod by hand with close joints and not overlapping. Plug all gaps between sections of sod and openings at angles with pieces of sod cut to fit.
- e. Install sod smooth and flush with adjoining paving and transition smoothly to existing grass areas.
- f. Thoroughly water sod immediately after installation.
- g. After sod and soil have dried sufficiently to prevent damage, roll sodded areas to ensure good bondage between sod and soil and remove minor depressions and irregularities.
- h. If sod workmanship is not satisfactory, take sod up and re-lay as directed by the COR.

MAINTENANCE

- a. Water, mow, and otherwise maintain all sodded areas a minimum of thirty (30) days and until final acceptance of contract. Do not allow sod to dry out.
- b. If requested by the COR, install post and rope barriers around sodded areas. Tie cloth or ribbon to rope at 10-foot intervals.

V/W-2, 4 of 4

SOIL MODIFICATION, TOPSOIL, AND SEEDING SPECIFICATIONS

DESCRIPTION

This work consists of the preparation of the subgrade and of the seed bed, seeding, seed protection, and maintenance.

MATERIAL

Compost and imported topsoil shall conform to that specified in V/W-2, Street Tree Planting Specifications.

Existing topsoil shall consist of natural, fertile, agricultural soil that is free from subsoil, slag, clay, stones, lumps, plants, roots, sticks, crabgrass, noxious weeds, and foreign matter, if approved for use by the COR.

Existing turf may be shredded and mixed into existing topsoil provided that it is mixed to a depth of at least 6 inches and does not interfere with subsequent operations.

Fertilizer shall consist of standard commercial starter fertilizer of 10-10-10 grade, FS O-F241, containing 10 percent phosphoric acid and 10 percent potash; be uniform in composition; and be a dry and free-flowing material suitable for application by a common fertilizer distributor or other approved equipment.

Lime shall consist of finely ground agricultural limestone, 90 percent calcium carbonate equivalent, conforming to standards of AOAC and meeting the following sieve analysis: At least 98 percent passing a No. 20 mesh sieve and 75 percent passing a No. 100 mesh sieve.

Seed shall consist of a certified blend of two or more turf-type Perennial Ryegrass varieties or cultivars listed as "Proven Cultivars" in the most recent turf recommendations published by the Extension Services of the University of Maryland or Virginia Polytechnic Institute and State University, with not less than 30 percent of one variety.

The seed shall conform to applicable State and Federal regulations and to test provisions of the Association of Official Seed Analysts, as follows:

| | minimum purity | minimum germination | maximum other crop | maximum weed |
|---------------------|-------------------|------------------------|-----------------------|-----------------|
| Perennial Ryegrass: | 98 | 90 | 0.50 | 0.35 |

"Other crop" shall not include Perennial Ryegrass, *Poa trivialis*, Timothy grass, bent grass, Canada bluegrass, or tall fescue; except that the seed of Perennial Ryegrass may contain up to 3 percent Ryegrass other than the named variety.

The seed shall be free of dock, cheat, chess, chickweed, plantain, crabgrass, Bermuda grass, and black medic.

Purchase of Perennial Ryegrass may be tested for fluorescence and shall not be accepted if fluorescence exceeds 3 percent.

Seed that has become wet, moldy, or otherwise damaged in transit or storage will not be accepted. It shall be furnished in sealed, standard containers.

Mulch for the seed bed shall consist of oat or wheat straw or wood cellulose fiber, reasonably free from weeds, growth, germination-inhibiting ingredients, or foreign matter detrimental to plant life, and shall be provided in a dry condition. Hay or chopped cornstalks are not acceptable.

Establishment Blanket: Uniform, open-weave jute or excelsior matting.

DELIVERY OF MATERIALS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

- a. Compost: Deliver in dry, unfrozen, completely composted condition.
- b. Topsoil: Deliver in dry, unfrozen, condition.
- c. Seed: Deliver in original containers showing analysis of seed mixture, percentage of pure seed, year of production, net weight, date of packaging, and location of packaging. Damaged packages are not acceptable. Store in a manner to prevent wetting and deterioration.
- d. Fertilizer: Deliver in unopened waterproof bags showing weight, chemical analysis, and name of manufacturer. Store in a manner to prevent wetting and deterioration.
- e. Lime: Deliver in unopened waterproof bags showing weight, composition, texture, and name of manufacturer. Bulk lime may be approved by the COR provided the same information is included on the bill of lading. Store in a manner to prevent wetting and deterioration.

SUBMITTAL

MULCH SUBMITTALS SHALL CONSIST OF THE FOLLOWING:

- a. Mulching material: 1/2 cubic foot.
- b. Establishment blanket: 1 square yard.
- c. The right is reserved to inspect and sample all topsoil at the source and at the time of delivery. These inspections shall be made without cost to the Contractor.

MATERIAL CERTIFICATION AND TEST RESULTS SHALL CONSIST OF THE FOLLOWING:

- a. Topsoil: Location of all sources.

Certified report of chemical analysis from a State Agricultural Experiment Station or approved agricultural laboratory, performed not more than sixty (60) days before the date of submission, including acidity, salinity, fertility, texture, and recommended rate of application of lime and fertilizer to imported and existing topsoil to sustain turf growth.

- b. Seed: Submit seed vendor's certification of grass seed mixture, indicating percentages of weight, purity, and germination for each grass species.
- c. Fertilizer and Lime: Certification of chemical composition.

INSTALLATION

GENERAL.

- a. Perform seeding work after planting and other work affecting ground surface has been completed.
- b. Seed lawn areas between March 1 and April 15 or between August 1 and October 31.
- c. Do not seed during drought or high winds, when the ground is frozen, when temperatures are 32°F or lower, or when excessive moisture or other conditions exist that are likely to damage the seed.

PREPARATION OF SUBGRADE (WHERE TOPSOIL HAS BEEN REMOVED, BURIED, OR IS NONEXISTENT):

- a. Remove contaminated subsoil.
- b. Thoroughly till area to be seeded to a 6-inch minimum depth.
- c. Remove stones, and debris, greater than 1 inch in diameter and dispose of off site.
- d. Leave entire area drainable and free from abrupt changes in slope.

PREPARATION OF SEED BED:

- a. Remove contaminated subsoil.
- b. After lawn areas with exposed subsoil have been tilled, spread stockpiled topsoil and supplement with imported topsoil to a minimum total depth of 4 inches.
- c. Cultivate area where existing topsoil has been left in place to a depth of 5 to 7 inches.
- d. Apply lime evenly at the rate determined by soil testing and work the lime into the top 3 inches of the soil with a disc harrow or other approved equipment.
- e. If compost is specified, cultivate to a depth of 6 to 9 inches so that compost is incorporated and the soil is thoroughly pulverized.
- f. Grade the finished surface of the seed bed to a smoothness comparable to results obtained by hand raking, leaving it clean and free of stones, debris, and depressions.
- g. Blend the final grades with existing adjacent ones. Leave the entire area drainable and free from abrupt changes in slope.
- h. After preparation of the finished surface, apply fertilizer evenly at rate of 10 pounds per 1,000 square feet and lightly rake it into the top 1 inch of the soil.

SEEDING

- a. Seed areas disturbed by construction, where shown on drawings, or as directed. Seeding Rate: 5 pounds per 1,000 square feet.
- b. Use the following dry application:
 - (1) Apply seed mixture immediately after final soil preparation.
 - (2) Compact the seed bed by means of a cultipacker or other similar equipment.

- (3) As shown on the plans, apply mulch at 1 1/2 to 2 tons per acre—or to cover 50 to 60 percent of the soil surface over the seed, and anchor it using a mulch tiller, chemical mulch binder, twine, or netting, as approved. If asphalt materials are to be used, take precautionary measures to prevent marking or defacing the structures, pavements, utilities, or plantings.
- (4) Apply water with fine spray to wet the soil 1 inch deep immediately after each area has been sown.

SEED PROTECTION ON SLOPES

- a. Where grade is 3:1 or greater, cover seeded slopes with an establishment blanket. Roll matting down over slopes without stretching or pulling.
- b. Lay matting smoothly on the soil surface, burying the top end of each section in a narrow 6-inch-deep trench. Leave 12 inches overlap from the top roll over the bottom roll. Leave a 4-inch overlap over adjacent section.
- c. Staple outside edges and overlaps at 36-inch intervals.
- d. Lightly dress slopes with topsoil to ensure close contact between matting and soil.
- e. In ditches, unroll matting in the direction of flow. Overlap ends of strips 6 inches with the upstream section on top.

PROTECTION

- a. Install post and rope barriers around seeded areas. Tie cloth or ribbon to rope at 10-foot intervals.
- b. Install “KEEP OFF” signs at appropriate locations.

MAINTENANCE

- a. Maintain surfaces and supply additional topsoil where necessary, including areas affected by erosion.
- b. Water to ensure uniform seed germination and to keep the surface of the soil damp.
- c. Apply water slowly so that the surface of the soil will not puddle and crust.
- d. Cut lawn areas when grass reaches a height of 3 inches. Maintain a minimum height of 2 inches. Do not cut more than one-third (1/3) of the blade at any one mowing.
- e. After the first mowing of the lawn, water the grass sufficiently to moisten the soil from 3 to 5 inches deep.
- f. Reseed damaged grass areas showing root growth failure, deterioration, bare or thin spots, or erosion.

ACCEPTANCE

- a. Seeded areas will be accepted when an even and uniform stand of turf (3 inches tall in lawn areas) is properly established.

Y



Fire Hydrant

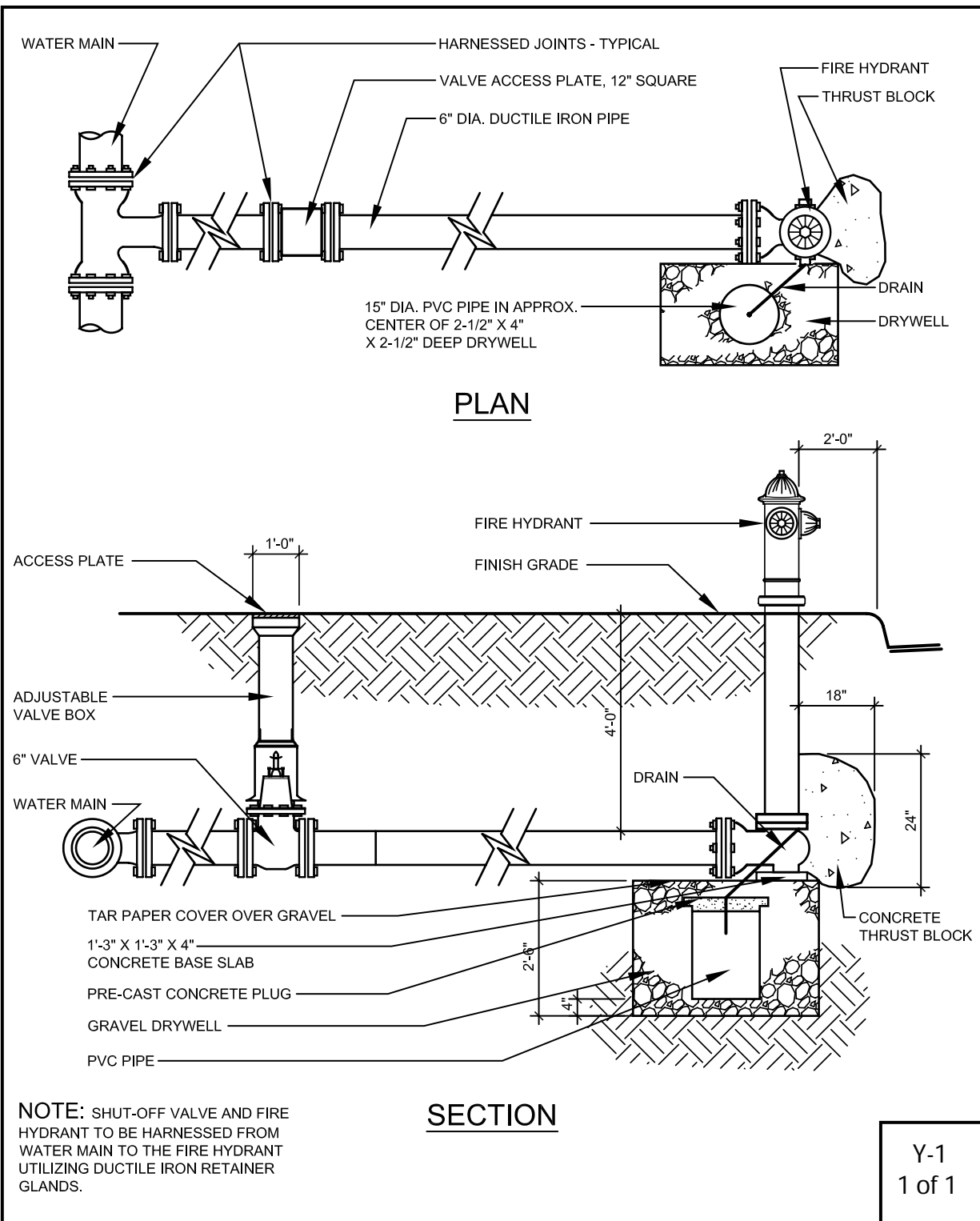


Figure 24: Fire Hydrant Detail
Interagency Initiative for National Mall Road Improvement

Y-2

FIRE HYDRANT SPECIFICATIONS

DESCRIPTION

This work consists of furnishing and installing fire hydrants.

MATERIAL

MATERIALS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

Ductile iron water pipe and fixtures shall conform to the requirements of ASTM A 716, for the sizes specified.

Copper water pipe and fixtures shall be seamless and conform to the requirements of ASTM B 88, Type L, for the sizes specified.

PVC pipe shall conform to the requirements of ASTM D 1785 for the sizes and strength schedules shown. The solvent cement for pipe and fittings shall conform to the requirements of ASTM D 2564.

Drain tubes shall be uncollapsible plastic and include a nipple, 3/4 inch by 36 inches.

Gravel shall conform to ASTM C 33, Size 57, or equivalent.

Fire hydrants shall be compression-type, hand-operated, D.C. standard pattern, for fire protection service under operating pressure of 150 pounds per square inch gauge (psig), manufactured per American Water Works Association (AWWA) C502. All fire hydrants furnished shall be tested to 300 psig operating pressure.

The manufacturer shall be regularly engaged in the design, manufacture, and maintenance of fire hydrants. The manufacturer must furnish satisfactory evidence of adequate facilities for furnishing repair parts for hydrants furnished.

Hydrant Model: A.P. Smith "S" type (made by U.S. Pipe and Foundry Co., Smith Valve and Hydrant Products, Birmingham, Alabama) and Model No. F-2640 (made by the Clow Corporation, Eddy-Iowa Division, Maple Shade, New Jersey), or approved equivalent model, are conditionally acceptable.

Other materials shall conform to the requirements of AWWA C502: "AWWA Standard for Dry-Barrel Fire Hydrants," except as modified and supplemented below:

- (1) Catalog and maintenance data shall be furnished if requested.
- (2) Certified drawings showing dimensions, construction details, and materials shall be submitted for approval.
- (3) An affidavit of compliance is required.
- (4) Size shall be 4 1/4-inch minimum, nominal inside diameter main valve opening.
- (5) Bury depth shall be with 4 1/2 feet of cover.
- (6) Barrel Sections: Hydrants shall be traffic-type fire hydrants with a frangible cross section near the ground line designed to break on vehicle impact.

- (7) Hydrant Top: Hydrants shall be permanently lubricated and require one-man maintenance, no special tools.
- (8) Outlet Nozzles: Two 2 1/2-inch nominal inside diameter hose nozzles; one 4-inch nominal inside diameter pumper connection shall be required. Nozzles must meet the following requirements:
 - Threads for 2 1/2-inch nozzles shall be per National Fire Standard Hose Coupling Screw Threads; threads for 4-inch pumper connection shall be as follows:
 - Major Diameter: 5 3/32 inch
 - Minor Diameter: 4 9/16 inch
 - Thread Form: V
 - Number Threads/Inch: 4
- (9) Operating Stem and Mechanism: Operating and outlet nozzle cap nuts shall be pentagonal in shape. The pentagon shall measure 1 3/16 inch from point to flat at the base of the nut and 1 1/8 inch at the top. Height of the nut shall be 1 3/16 inch.
- (10) O-Ring Seals: O-ring seals shall be used in lieu of a stuffing box.
- (11) Gaskets: Material shall be rubber composition; asbestos prohibited.
- (12) Hydrant Inlet: Boot-side inlet shall be 6 inches in diameter with a retainer gland mechanical joint.
- (13) Painting: The outside of the hydrant, above grade line, shall be painted with two coats of iron oxide primer and two finish coats of Benjamin Moore Ironclad Retardo Rust Inhibitive Paint 163, color #80, Black Satin Finish, or approved equal.

CONSTRUCTION REQUIREMENTS

GENERAL .

Furnish materials and workmanship conforming to the standards of the AWWA, "National Building Code," and local plumbing and safety codes. Installation shall conform to the requirements of AWWA 600, Section 3.7. Hydrant shall be set plumb with 4-inch nozzle normal to the curb line.

Inspect each joint or fixture and clean the interior of the pipe before placing it in the trench. Prevent the entrance of dirt, water, or other contaminants into the pipe during installation.

Center and push each joint completely home, and fasten the joint according to the manufacturer's recommendations.

Brace major fixtures or fixtures that could blow off the line under pressure with a cast-in-place concrete thrust block. Cast the block between the fixture and the undisturbed vertical trench wall with a minimum bearing surface of 2 square feet against the vertical wall.

Dry well pipe shall be installed and gravel shall be carefully placed in the well around the empty pipe. The hydrant drain tube shall be inserted in the drain plug hole. Tar paper shall be placed over and overlap the dry well to keep out earth.

Testing and Disinfecting Lines. Test all joints under pressure before backfilling. Repair all leaks.

Backfilling. Hand place the backfill to 1 foot over the top of the pipe. Remove all rocks and hard lumps from the hand-placed layer.

Obtain permits, arrange for inspections, and pay all fees necessary to obtain water service.

Any items disturbed during construction, including shrubs and lawns, shall be restored by the Contractor upon completion of work. Grassed areas shall be resodded.

Z



Post and Chain Barriers

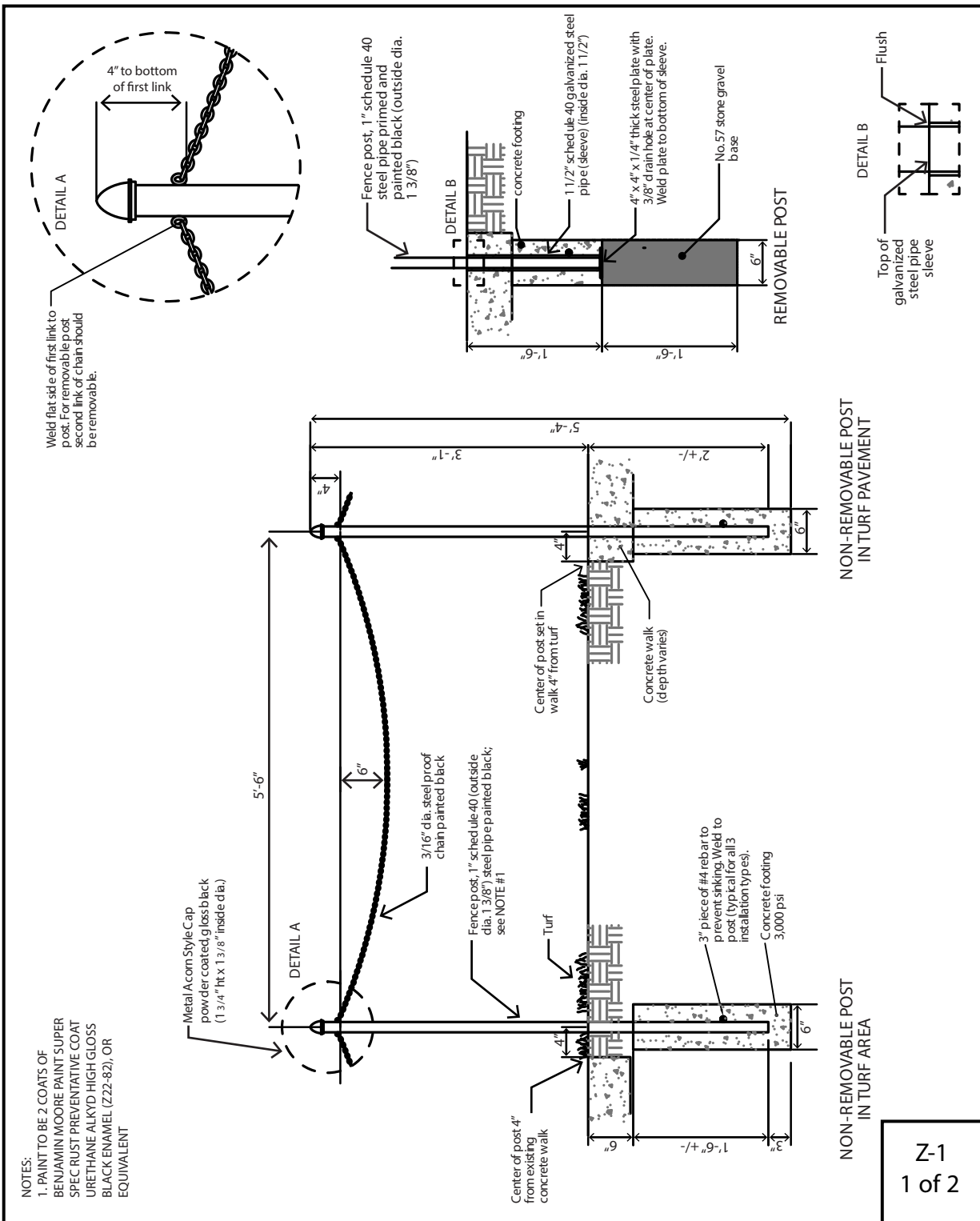


Figure 25: Post and Chain Barrier Detail—One Inch Post & Chain Section

Interagency Initiative for National Mall Road Improvement

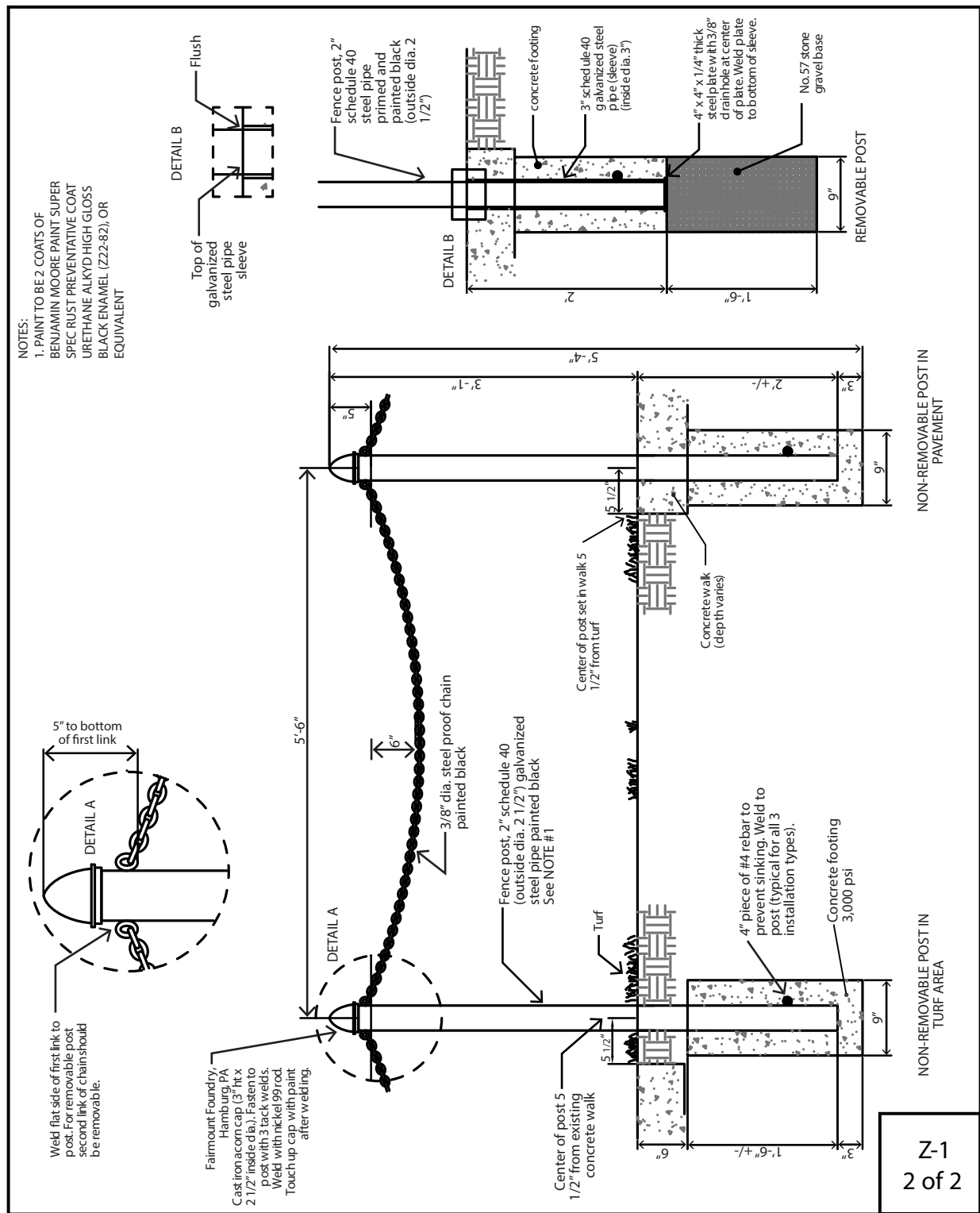


Figure 25: Post and Chain Barrier Detail—Two Inch Post & Chain Section

Interagency Initiative for National Mall Road Improvement

Z-2

ONE INCH POST AND CHAIN BARRIER SPECIFICATIONS

One inch post and chain barriers are to be used along interior walkways within the Memorial Core area.

DESCRIPTION

This work consists of providing and installing posts and chains.

Posts shall be 1 inch schedule 40, galvanized steel pipe (outside diameter 1 3/8 inch).

Caps shall be cast iron acorn-shaped cap 1 3/4 inch height by 1 1/8 inch inside diameter.

Chain shall be 3/16 inch steel proof chain painted black.

Concrete footings shall be 3,000 psi concrete as specified in F-2, Material Section.

CONSTRUCTION REQUIREMENTS

Install in locations as shown on the plan.

SUBMITTAL

Submit for approval one (1) complete post and one (1) 5-foot length of chain with connecting link.

TWO INCH POST AND CHAIN BARRIER SPECIFICATIONS

Two inch post and chain barriers are to be used along roadways.

DESCRIPTION

This work consists of providing and installing posts and chains.

Posts shall be 2 inch schedule 40, galvanized steel pipe (outside diameter 2 1/2 inch)

Caps shall be cast iron acorn-shaped cap 3 inch height by 2 1/2 inch inside diameter.

Chain shall be 3/8 inch steel proof chain painted black.

Concrete footings shall be 3,000 psi concrete as specified in F-2, Material Section.

CONSTRUCTION REQUIREMENTS

Install in locations as shown on the plan.

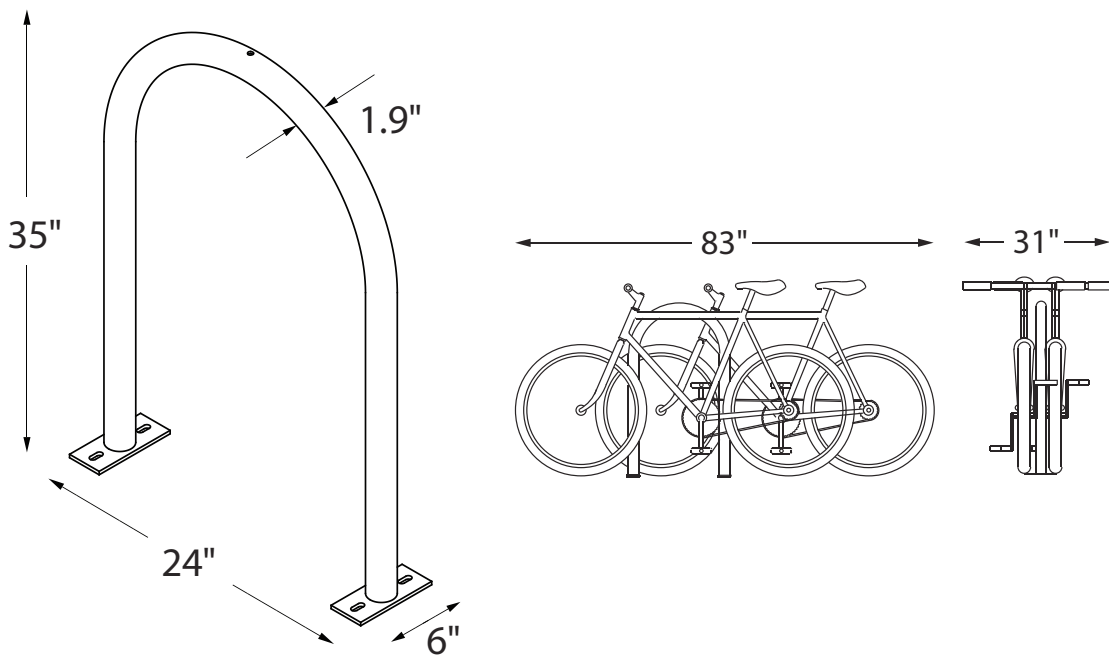
SUBMITTAL

Submit for approval one (1) complete post and one (1) 5-foot length of chain with connecting link.

AA, BB



Bike Racks



SETBACKS

Wall Setbacks:

For racks set parallel to a wall:

Minimum: 24"

Recommended: 36"

For racks set perpendicular to a wall:

Minimum: 28"

Recommended: 36"

Distance Between Racks:

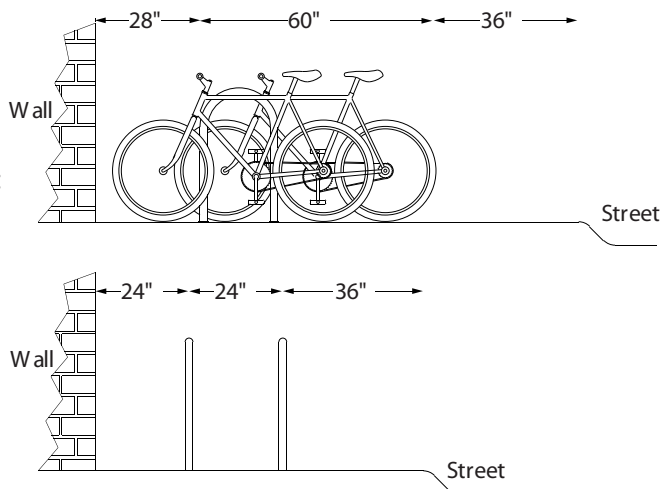
Minimum: 24"

Recommended: 36"

Street Setbacks:

Minimum: 24"

Recommended: 36"



NOTE: Finish to be Rubbery PVC Dip

AA-1
1 of 1

Figure 26: Hoop Rack Bicycle Rack Detail

Interagency Initiative for National Mall Road Improvement

AA-2

HOOP RACK BICYCLE RACK SPECIFICATIONS

DESCRIPTION

This work consists of furnishing and installing bicycle racks.

MATERIAL

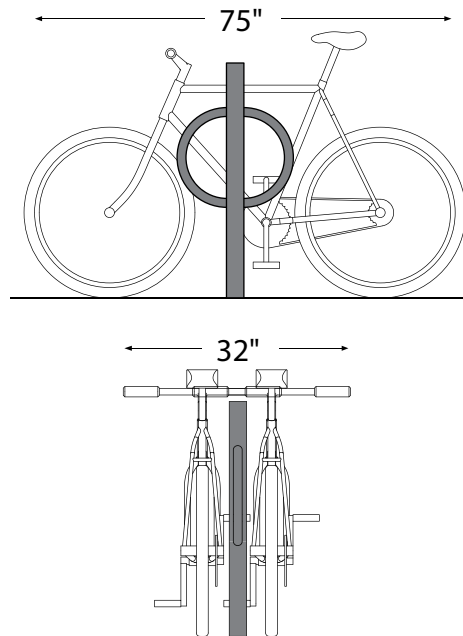
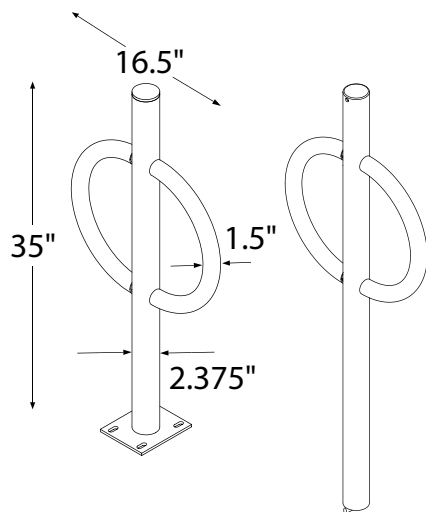
Bicycle racks shall be Hoop Racks as manufactured by Dero Bike Rack Company or approved equal.

Rack shall secure bicycle frame and both wheels. Padlock protection shall be provided, and the rack must be able to accommodate U-shaped locks.

Finish to be Rubbery PVC Dip.

CONSTRUCTION REQUIREMENTS

Install concrete per the manufacturer's recommendations.



SETBACKS

Wall Setbacks:

For racks set parallel to a wall:

Minimum: 12"

Recommended: 24"

For racks set perpendicular to a wall:

Minimum: 35" (centerline measurement)

Recommended: 38" (54" if aisle is needed between bike and wall)

Distance Between Racks:

For racks set facing one another:

Minimum: 24"

Recommended: 38"

For racks set end to end:

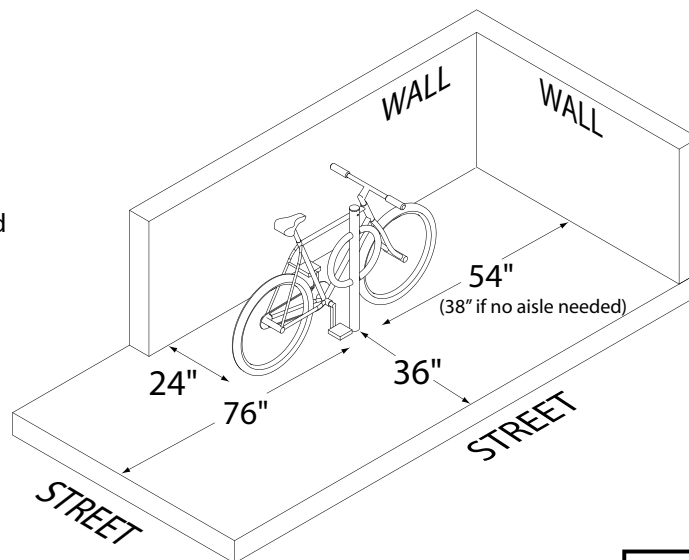
Minimum: 90"

Recommended: 111"

Street Setbacks:

Minimum: 36"

NOTE: Finish to be black or green powder coat



BB-1
1 of 1

Figure 27: Bike Hitch Bicycle Rack Detail

Interagency Initiative for National Mall Road Improvement

BB-2

BIKE HITCH BICYCLE RACK SPECIFICATIONS

DESCRIPTION

This work consists of furnishing and installing bicycle racks.

MATERIAL

Bicycle racks shall be Bike Hitches as manufactured by Dero Bike Rack Company or approved equal.

Rack shall secure bicycle frame and both wheels. Padlock protection shall be provided, and the rack must be able to accommodate U-shaped locks.

Finish to be black or green powder coat.

CONSTRUCTION REQUIREMENTS

Install concrete per the manufacturer's recommendations.

Appendix

A1žMemorandum of Agreement

Agreement Number: DTFH71-92-A-00013

MEMORANDUM OF AGREEMENT

BETWEEN

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

AND

DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
NATIONAL CAPITAL REGION

AND

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DEPARTMENT OF PUBLIC WORKS

AND

ARCHITECT OF THE CAPITOL

FOR THE
REHABILITATION OF ROADS SERVING
THE DISTRICT OF COLUMBIA
MALL/MONUMENTAL AREA

THIS MEMORANDUM OF AGREEMENT (hereinafter referred to as "the Agreement") is among the DEPARTMENT OF TRANSPORTATION, through the FEDERAL HIGHWAY ADMINISTRATION (hereinafter referred to as "the FHWA"), the DEPARTMENT OF THE INTERIOR, through the NATIONAL PARK SERVICE, NATIONAL CAPITAL REGION (hereinafter referred to as "the NPS"), the GOVERNMENT OF THE DISTRICT OF COLUMBIA, through the DEPARTMENT OF PUBLIC WORKS (hereinafter referred to as "the DCDPW"), and the ARCHITECT OF THE CAPITOL (hereinafter referred to as "the AOC").

PURPOSE: The purpose of this Agreement is to establish the responsibilities and procedures under which work will be performed by the parties to the Agreement named above to implement the rehabilitation and/or the reconstruction of roads within the District of Columbia monumental core area under the FHWA's Federal Lands Highway Park Road and Parkway Program.

WHEREAS, the Economy Act (15 U.S.C. Section 1535) authorizes a Government agency to perform services in their area of expertise for the other Government agencies;

WHEREAS, the mall area is defined as being generally bounded by Constitution Avenue, Independence Avenue, 2nd Street N.E./S.E. and the Potomac River;

WHEREAS, the concept for improvement of the mall area roads was initiated by the Secretary of Transportation;

WHEREAS, the NPS and the FHWA have agreed to prioritize the importance of the roads accessing the mall area and fund the improvements to the extent possible;

WHEREAS, the funding of these improvements is to be from the Federal Lands Highway Program, specifically the Park Road and Parkway Program for the roads owned and maintained by the NPS and the Public Lands Highway Program for the roads owned and maintained by the DCDPW and the AOC, and other applicable sources of federal funds;

WHEREAS, the aesthetic design standards to be used in the development of these projects will be in accordance with the design manual developed as part of this coordinated effort;

AND WHEREAS, the FHWA, the NPS, the DCDPW, and the AOC do hereby agree as follows:

1. The FHWA will be the lead agency for the mall road initiative, and shall be responsible for:
 - a. allocating the Federal Lands Highway Program funding used for the initiative.
 - b. jointly approving the required environmental documentation with the NPS for all roads in accordance with the National Environmental Policy Act of 1969 (Pub. L. No. 91-190; 83 Stat. 852; January 1, 1970; 42 U.S.C. 4321, et seq.);
 - c. compliance with Section 106 of the National Historic Preservation Act of 1966 (Oct. 15, 1966; 80 Stat. 915, 917; 16 U.S.C. 470f);
 - d. review and approval of the design of the proposed mall area road improvements by the National Capital Planning Commission, pursuant to the Act of June 6, 1924 (43 Stat. 463; 40 U.S.C. 71, et seq.), and the Commission of Fine Arts, pursuant to the Act of May 17, 1910 (36 Stat. 371) and May 16, 1930 (46 Stat. 366);
 - e. public involvement activities required by law;

- f. determination of right-of-way (as applicable), design, and construction requirements;
- g. determination of acceptability of the work to meet all applicable standards; and,
- h. approval and acceptance of the work.

All actions by the FHWA will be in accordance with the requirements of Title 23, United States Code and the May 19, 1983, FHWA/NPS Interagency Agreement. The preliminary engineering and construction work outlined herein will be in accordance with the standards, policies, and procedures prescribed in the Federal-Aid Highway Program Manual, Volume 6, Chapter 2, Section 1 (FHPM 6-2-1), and Volume 6, Chapter 9. Section 13 (FHPM 6-9-13), except as modified by the parties in accordance with this Agreement.

- 2. In addition to the items listed above, the FHWA, through its Eastern Federal Lands Highway Division (FHWA-EFLHD), will be responsible for:
 - a. obligating Federal funds allocated to the FHWA-EFLHD;
 - b. development of the proposed improvements for mall area roads that are owned and maintained by the NPS;
 - c. final design Plans, Specifications, and Estimate (PS&E) package for NPS roads; and,
 - d. construction administration of the proposed improvements to the NPS roads.
- 3. In addition to the items listed above, the FHWA, through its District of Columbia Division Office (FHWA-DC), will be responsible for:
 - a. overall coordination of the improvements proposed for roads owned and maintained by the District or the AOC;
 - b. authorizing all phases of work administered by the DCDPW, and requesting Federal funds from the FHWA-EFLHD through the submittal of an FHWA-37;
 - c. monitoring and acceptance of all work performed by the DCDPW;
 - d. approving environmental documentation and overseeing the obtaining of any permits required for the DCDPW road improvements;


- e. providing information for AOC Congressional reports.
4. The DCDPW agrees to be a party to this initiative for the District and AOC roads indicated on exhibit A, which shall govern this agreement unless amendments are agreed to by the DCDPW and the AOC, and the DCDPW will be responsible for:
- a. development of the proposed improvements for the mall area roads owned and maintained by the District or the AOC;
 - b. cooperating with the NPS in the coordination of this initiative with local interests;
 - c. preparing the necessary environmental documentation for FHWA approval and acquiring all necessary environmental permits for the work proposed on DCDPW and AOC roads;
 - d. executing agreements for utility adjustments and coordination of the same during the construction phase;
 - e. coordinating the planned improvements with the emergency service providers;
 - f. approving any permits deemed necessary for the construction of any of the proposed improvements as a result of this Agreement;
 - g. final design PS&E package for DCDPW and AOC roads;
 - h. administering the construction of the improvements on DCDPW and AOC roads;
 - i. upon completion of construction of only District owned and/or maintained roads, accepting the completed project and maintaining the project in accordance with the Federal-aid policies.
5. The NPS agrees to be a party to this initiative for the NPS roads and areas of jurisdiction, and will be responsible for:
- a. cooperating with the DCDPW in the coordination of the initiative with local interests;


- b. preparing the necessary environmental documentation for all roads, jointly approving the document with the FHWA, and acquiring all necessary environmental permits;
 - c. executing agreements for utility adjustments and coordination of the same during the construction phase;
 - d. coordinating the planned improvements with the emergency service providers;
 - e. approving any permits deemed necessary for the construction of any of the proposed improvements as a result of this Agreement;
 - f. approving the final PS&E package for proposed improvements to NPS roads;
 - g. upon completion, accepting the completed project and maintaining the project in accordance with the Federal Lands Highway Program;
 - h. coordinating any press releases or public information activities in conjunction with the DCDPW and FHWA.
6. The AOC agrees to be a party to this initiative for the AOC roads indicated on exhibit A, which shall govern this agreement unless amendments are agreed to by DCDPW and the AOC, and the AOC will be responsible for:
- a. coordinating scheduled improvements to the roads under the jurisdiction of the AOC, as indicated on exhibit A, with the officials in the Capitol;
 - b. Jurisdiction over the roads indicated on exhibit A shall govern this agreement unless amendments are agreed to by the AOC and DCDPW.
 - c. reviewing and approving the development of the proposed improvements as administered by the DCDPW;
 - d. approving of the final PS&E package for construction for AOC roads; and
 - e. upon completion of the construction of the AOC road project, acceptance of and agreement to maintain the completed project in accordance with current law.


7. The scheduling and funding procedures will be as follows:
 - a. All Federal Lands Highway Park Road and Parkway funds will be allocated to the FHWA-Federal Lands Highway Program Administrator or to the NPS, in accordance with Federal Lands Highway Park Road and Parkway Program and the interagency agreement. All approved Federal Lands Highway Public Lands Highway funds will be allocated to the FHWA-DC;
 - b. The determination of items eligible for funding will be those items of work normally associated with road rehabilitation and reconstruction work, in accordance with the approved procedures for the type of funding used. Funding of work outside of the roadway work (i.e. street furniture, plantings other than replacement of plantings impacted by the roadway work, etc.) will be from sources other than the FHWA Highway Trust fund.
 - c. The NPS Headquarters Office will be responsible for the overall prioritization of projects to be funded through the Park Road and Parkway Program.
 - d. Upon request of the DCDPW, the FHWA-DC will be responsible for authorizing all work to be performed by the DCDPW.
 - e. A Project Agreement, Form PR-2, will be prepared and executed between the DCDPW and the FHWA-DC for each phase of work or individual authorizations administered by the DCDPW.
 - f. Reimbursement to the DCDPW for work it performs will be through the FHWA-DC's current Federal-aid billing process.
 - g. The FHWA-EFLHD, the FHWA-DC, the DCDPW, and the NPS will coordinate to maintain a current record of all fund obligations and expenditures, and will furnish the status of funds upon request of any parties to this Agreement.
8. The DCDPW will submit final PS&E package to the FHWA-DC for written approval and authorization to proceed with the construction of the project prior to advertisement. For roads owned and maintained by the AOC, the DCDPW will have obtained the AOC's final review and approval of the plans prior to submittal to the FHWA-DC. Review of the bids received, and the contract award will proceed according to Federal-aid procedures.

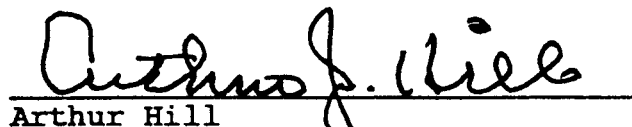
9. The FHWA-EFLHD will submit final PS&E package to the NPS for written approval and authorization to proceed with the construction of the project prior to advertisement.
10. All parties to this Agreement will be afforded the opportunity to inspect the work in progress (environmental evaluation, design, right-of-way, and construction) at any time, and to participate in field reviews, plans-in-hand reviews, bid openings, preconstruction conferences, and periodic and final construction inspections.
11. Following execution of this Agreement all parties will designate a representative to be the point of contact for the administration and coordination of the subject improvements.
12. The schedule of projects included in this Agreement as Attachment A.
13. The parties shall meet as necessary to review the status of the program, the projects scheduled for advertisement, and the funding. Adjustments to the program will be initiated as a result of these quarterly meetings, and will be approved by all of the parties to this Agreement.
14. The DCDPW will be responsible for the administrative settlement or adjudication of claims arising under contracts administered by the DCDPW, utilizing project funds. The FHWA-EFLHD will be responsible for the administrative settlement or adjudication of claims arising under contracts administered by the FHWA-EFLHD utilizing project funds.

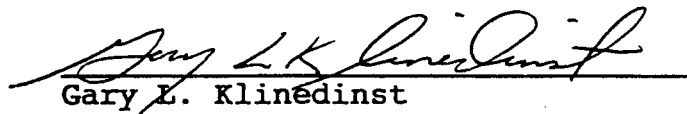
APPROVED:


George M. White
Architect of the Capitol


Esther Hager Francis
Director
District of Columbia
Department of Public Works


Robert G. Stanton
Regional Director
National Capital Region
National Park Service


Arthur Hill
Division Administrator
District of Columbia
Federal Highway Administration


Gary L. Klinedinst
Division Engineer
Eastern Federal Lands Highway Division
Federal Highway Administration

A2ŽNCPC Commission Approval

NATIONAL CAPITAL PLANNING COMMISSION

**COMMISSION
MEMBERS**

Appointed by the
President of the United States

Glen T. Urquhart
CHAIRMAN

William E. Baumgaertner
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Appointed by the
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Secretary of the Interior
Honorable Manuel Lujan, Jr.

Administrator of General Services
Richard G. Austin

Chairman, Committee on
Governmental Affairs
United States Senate
Honorable John Glenn

Chairman, Committee on the
District of Columbia,
U.S. House of Representatives
Honorable Ronald V. Dellums

Mayor, District of Columbia
Honorable Sharon Pratt Kelly

Chairman, Council of the
District of Columbia
Honorable John Wilson

EXECUTIVE DIRECTOR
Reginald W. Griffith

IN REPLY REFER TO:
NCPC File No. 1799

JUL 28 1992

Mr. Arthur Hill
Chairman, Interagency Initiative for National
Mall Road Improvement Program
U. S. Department of Transportation
Federal Highway Administration
District of Columbia Division
Union Center Plaza, Suite 750
820 First Street, NE.
Washington, D.C. 20002

Dear Mr. Hill:

The National Capital Planning Commission, at its July 22, 1992 meeting, approved the Streetscape Manual for the Interagency Initiative for the National Mall Road Improvement Program as a guide for the design and installation of streetscape improvements for roadways in the vicinity of the National Mall. A copy of the Executive Director's Recommendation, approved by the Commission, is enclosed.

The Commission was impressed with the manual and expressed appreciation to the Interagency Workgroup for developing guidelines which will serve to provide an orderly, consistent and coordinated treatment for roadways in one of the most important urban public spaces in the Nation.

Sincerely,

(Sgd. Reginald W. Griffith)

Reginald W. Griffith
Executive Director

Enclosure

cc: **Allen W. Burden**
Co-Chairman, Interagency Initiative for National

NATIONAL CAPITAL PLANNING COMMISSION
801 PENNSYLVANIA AVENUE, N.W. SUITE 301
WASHINGTON, D.C. 20576

NCPC File No. 1799

INTERAGENCY INITIATIVE
FOR NATIONAL MALL
ROAD IMPROVEMENT PROGRAM
STREETSCAPE MANUAL

Executive Director's Recommendation

July 17, 1992

The Executive Director recommends that the Commission approve the Streetscape Manual for the Interagency Initiative for the National Mall Road Improvement Program as a guide for the design and installation of streetscape improvements for roadways in the vicinity of the National Mall.

* * *

BACKGROUND AND STAFF EVALUATION

Description of Proposal

The Federal Highway Administration (FHWA) has initiated a coordinated program to improve the roadways in the vicinity of the National Mall. Funding for the improvements is through the Federal Lands Highway Program administered by U. S. Department of Transportation (DOT) and authorized in the recent Intermodal Surface Transportation Efficiency Act of 1991 called ISTEA. A multi-agency workgroup has been formed to bring a unified effort to addressing the roadway conditions in the Mall area. This workgroup is composed of agencies that have jurisdiction over the roadways, e.g., District of Columbia, National Park Service, Architect of the Capitol, and agencies that have a special interest in the area's roads: General Services Administration, Smithsonian Institution, Commission of Fine Arts, National Capital Planning Commission, Pennsylvania Avenue Development Corporation, National Gallery of Art, and Federal Highway Administration.

The Interagency Workgroup has identified 25 projects for implementation over an 8-year period. These projects are generally the streets bordering or within the area extending from the Capitol Grounds westward between Constitution and Independence Avenues (the Mall) to the Lincoln Memorial, including all of West Potomac Park. The Ellipse and Presidents' Park north of Constitution Avenue is also included. By combining the projects into a joint program administered through the FHWA it is

anticipated that considerable savings in time and money can be achieved. To achieve consistency in the application of contracts a standardized procedure for traffic management, utilities, special events, requirements for work and storage, and other operation and logistical requirements is being formulated.

A manual to guide the treatment and design of the streetscape elements along the roadways has also been prepared. Its purpose is to insure a consistent and coordinated streetscape treatment, since the program will be implemented by many different agencies. It will be used in the implementation of the current initiative but is applicable beyond the initial program. The Manual does not supersede officially adopted plans and policies established for the area but will assist in implementation of the plans. It deals with the areas fronting on roadways and pedestrian ways considered part of the street scene.

The Manual describes the underlying concept and establishes a classification system for roadways in the vicinity of the National Mall. The premise is that the streetscape character and quality should reflect the function the roadway performs. The roadways are placed into five classes: 1) Major Streets, Avenues, and Gateways; 2) Major Park Roads; 3) Park Roads and Drives; 4) Local Streets; and 5) Special Pedestrian Ways.

A matrix outlining the streetscape elements for each class of roadway is included in the second section of the Manual. An illustration of each element is provided. A map identifies the street light standard to be used for each roadway.

A third section describes how the streetscape elements in the matrix relate to the projects proposed in the FY 1991 to FY 1998 road improvement program. The projects to be undertaken by the District of Columbia, National Park Service, and Architect of the Capitol are listed and mapped by program year. A chart for each roadway outlines existing conditions and the proposed changes and improvements for each project needed to incorporate the streetscape elements.

In the final section, details and specifications for each streetscape element are included for use in preparing construction documents for roadway improvement projects.

Two important elements of the streetscape are not covered by the Manual at this time: street signage and roadway vendors. A consultant contract has been issued to study all types of signage in the National Mall area including information, directional and traffic control signs and their placement in the street scene. When the consultant recommendations are completed and approved, they are to be included in the Manual.

A special study group has been assigned to prepare guidelines for the accommodation of vendors in the roadways in the vicinity of the Mall. This is being undertaken in conjunction with the D.C. Department of Consumer Affairs. When they are completed and approved, these guidelines will be incorporated into the Manual.

Previous Commission Action

On September 4, 1986, the Commission approved Illustrative Design Concepts for the Special Street Plan for Constitution Avenue, NW., between First and Twenty-Third Streets. Draft Special Street Plans for both Constitution and Independence Avenues,

NW., were prepared and authorized by the Commission to be circulated for review and comment in August 1984. Subsequently, the Commission approved a number of projects implementing the special street plan concepts notably at the Forrestal Building and the Washington Monument Grounds. The proposed guidelines and streetscape treatment in the Manual are consistent with these Commission plans and reports.

Conformance with the Comprehensive Plan

Almost all of the roadways in the proposed 8-year program are designated Special Streets in the Preservation and Historic Features element of the Comprehensive Plan. Additionally, the National Mall, the Capitol Grounds, Presidents Park, and West Potomac Park are designated Special Places. The guidelines in the Manual are consistent with several policies in the element, especially the policies stating: "Special Streets and Places should be maintained and enhanced in a manner that promotes their roles as major features that help establish the images and the symbols of the National Capital in the minds of its residents and visitors. . . ." Also "the visual quality of Special Streets and Places should be carefully controlled and coordinated by the selection and placement of signs, traffic signals, lighting, bus stops, and other elements of street furniture, as well as pavement patterns and materials that together should promote a harmonious, orderly, and safe streetscape"

Conformance with the Federal Capital Improvements Program

The National Mall Roads Initiative Program is included in the Federal Capital Improvements Program 1993-1997.

Coordinating Committee

The Streetscape Manual was reviewed by the Coordinating Committee on July 8, 1992. The Committee reported that the proposal has been coordinated with all agencies represented.

Agencies represented at the meeting included the General Services Administration, National Park Service, D.C. Office of Planning, D.C. Department of Public Works, Washington Metropolitan Area Transit Authority and National Capital Planning Commission.

Commission of Fine Arts

The Commission of Fine Arts reviewed and approved the Streetscape Manual at its meeting on June 18, 1992, with recommendations regarding inlet cover details and maintaining the orientation of the Twin-Twenty street lighting fixtures parallel to the curb.

Evaluation

The guidelines in the Manual evolve from earlier special street plan studies for Constitution and Independence Avenues prepared by the Commission staff. The guidelines follow and will serve to implement the proposals in the illustrative design concepts for the special street plan for Constitution Avenue, NW., approved by the Commission in September, 1986. The Manual guidelines are consistent with policies in the Preservation and Historic Features element of the Comprehensive Plan which call

for the protection, maintenance, and enhancement of the special character and visual quality of the special streets and historic places in the Mall area.

The implementation of the Manual guidelines in the rehabilitation, reconditioning and reconstruction of roadways in the National Mall area will serve to provide an orderly, consistent, and coordinated streetscape treatment in one of the most important urban public spaces in the Nation. The Manual has been prepared through the cooperative efforts of ten key agencies involved in the improvement of conditions in the Mall area and has their endorsement. The staff recommends that the Commission approve the Streetscape Manual as a guide for the design and installation of streetscape elements for roadways in the vicinity of the National Mall.

A3žCFA Approval

THE COMMISSION OF FINE ARTS

ESTABLISHED BY CONGRESS 17 MAY 1910

THE PENSION BUILDING
441 F STREET, N.W., SUITE 312
WASHINGTON, D.C. 20001

202-504-2200
202-504-2195 FAX

1 July 1992

Dear Mr. Hill:

The Commission was pleased to meet with you on 18 June 1992 for a formal review of the proposed Interagency Mall Streetscape Manual. The members commend your effort on the Mall Road Improvement Program, noting the especially difficult task of melding various agencies with often disparate agendas into one constructive body.

As you know, prior to the meeting the Commission visited 17th Street between Constitution and Independence Avenues where the Park Service is completing the last touches on upgrading the roadway and adjoining walk-ways in the manner described in the Manual. This inspection provided an excellent opportunity to judge first-hand the effect of the various components illustrated, resulting in the general approval of the Streetscape Manual draft. However, several details deserve further consideration.

As a rule, the linear aspects of a street should always be reinforced whenever possible. Though subject to interruption, curbs are an obvious opportunity. With respect to the 17th Street upgrade, however, the inlet covers for the catch basins are overly disruptive. The covers conform to the Manual specifications for continuous curbside tree lawns in that they are cast stone simulating the granite curb with a protective steel nosing roughly half the width of the curb. For the purpose of continuity, the Commission recommends changing the Manual by increasing the width of the steel nosing to align with the width of the curbstone and darkening the color of the cast stone cover to blend in with the adjacent grass and the iron access grate. This will help to soften necessary interruptions in the curb line. (The members were pleased to note that elsewhere the covers are aggregate-finished where they intersect the sidewalk.)

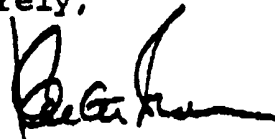
Aside from this, the most important concern involved street lighting. For many years (decades really) the Commission has advocated a parallel orientation to the curb for the Twin Twenties (again, that linear reinforcement) rather than perpendicular to the curb, as suggested in the Manual. This is no idle whim. Rather, there is a very practical reason--which is that much greater light is shone

lights, carefully considering every aspect of the standards, while serving as a member of the Commission of Fine Arts. The Twin Twenties were meant to be parallel to the curb, and we strongly recommend they stay that way.

On this subject, we come to the crux of the problem. All participants seem to agree that the most satisfactory light source is metal halide. The problem, however, appears to be centered on choosing a uniform wattage that will be both aesthetically pleasing as well as cost and security effective. The Commission agrees with the National Park Service; 100 watt metal halide fixtures will be sufficient in terms of aesthetics and safety, in effect providing a soft, pervasive non-glare light. It is this potential for glare that makes a fixture less safe as the light intensity increases. A 175 watt metal halide fixture is intense enough to produce a narrow zone of glare that actually appears to darken the surrounding area by contrast, a dangerous consequence for the pedestrian. Similarly, a 400 watt fixture (advocated by some District officials) provides the intensity required for a sixty-foot mast spaced 200 feet apart along a superhighway. Placing such a fixture at street level in an urban setting would be disastrous on every level.

These caveats aside, again accept the congratulations of the Commission. We look forward to continuing interagency participation and the opportunity to review the completed Manual in the near future.

Sincerely,



J. Carter Brown
Chairman

Mr. Arthur Hill
Chairman
District of Columbia Division
Federal Highway Administration
U.S. Department of Transportation
Union Center Plaza, Suite 750
820 First Street, N.E.
Washington, D.C. 20002

A4žSmithsonian Institution Approval



SMITHSONIAN INSTITUTION

Washington, D.C. 20560
U.S.A.

February 5, 1993

Mr. Arthur J. Hill, P.E.
Division Administrator
District of Columbia Division
Federal Highway Administration
Union Center Plaza, Suite 750
Washington, D. C. 20002

Re: Smithsonian Institution Endorsement of
the Interagency Initiative for National
Mall Road Improvements Task Force
Streetscape Manual

Dear Mr. Hill:

Over the past several months, the Smithsonian has been pleased to participate in the Interagency Initiative for National Mall Road Improvements Task Force. Your efforts have provided an excellent setting for all parties in the Mall area to express their concerns and give their input. The product of the Architectural/Engineering Subgroup, the Streetscape Manual, supplies guidelines that will be particularly useful to us as we plan major projects and repairs in the future. With this letter we extend our endorsement and approval of that document.

Sincerely yours,

Richard L. Siegle, P.E.
Director of Facilities Services

cc: Mr. Edward Hromanik
National Capital Planning Commission
801 Pennsylvania Avenue, N. W., Suite 301
Washington, D. C. 20576

A5. Project Completion History

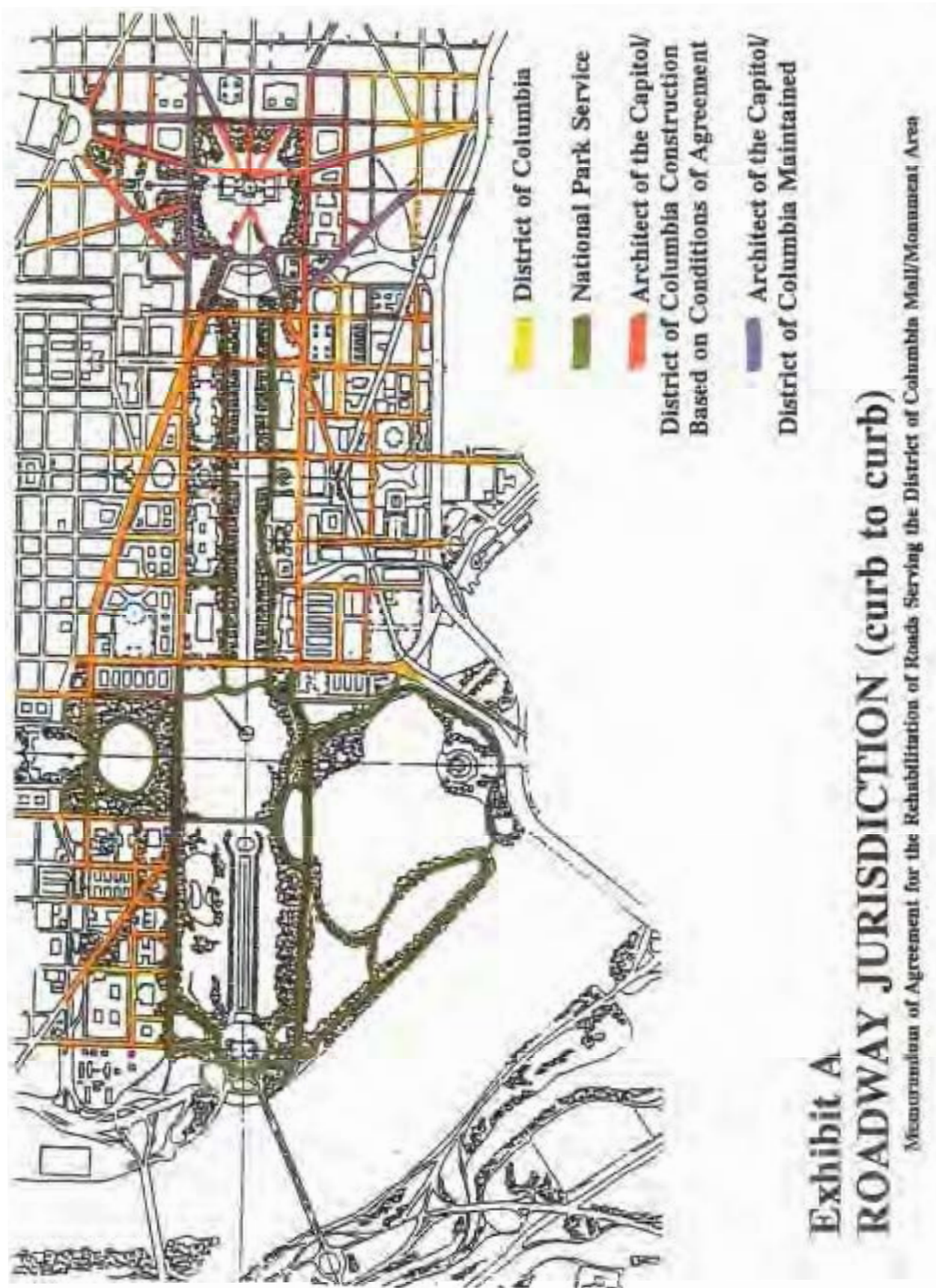
The FY 1991–98 road improvement program contains projects that will be completed by the NPS with the FHWA, the DC, and the AOC. Map 4 presents the location and the year when each project is scheduled for construction.

The streetscape elements and design guidelines outlined in this Manual will be incorporated into each of these projects. A chart detailing the existing conditions and the suggested streetscape improvements and changes for each project in the program is provided in this section. The projects included in the current program are as follows:

| YEAR STARTED | YEAR COMPLETED | AGENCY | PROJECT DESCRIPTION |
|-----------------|-------------------|--------|---|
| FY 91 | FY 92 | DC | 4th Street – Const. Ave. to Indep. Ave. |
| | FY 91 | DC | Independence Ave. – 7th St. to 12th St. |
| | FY 92 | DC | 14th Street – Const. Ave. to D St. |
| | FY 92 | NPS | 17th Street – Const. Ave. to Indep. Ave. |
| FY 92 | FY 94 | DC | 7th Street – Const. Ave. to Indep. Ave. |
| | FY 99 | DC | Independence Ave. – 3rd St. to 7th St. |
| FY 93 | FY 95 | DC/AOC | 1st Street, NW/SW – Const. Ave. to Indep. Ave. |
| | FY 95 | DC | Pennsylvania Ave. – 1st St. to 3rd St. |
| | FY 95 | DC | 17th Street – Const. Ave. to D St. |
| | FY 95, 10 | NPS | Ohio Drive |
| | FY 97 | NPS | Madison Drive |
| FY 94 | FY 98 | DC | Constitution Ave. – 7th St. to 15th St., NW |
| | FY 97 | NPS | 15th Street – Const. Ave. to Maine Ave. |
| | FY 97 | NPS | West Basin Drive |
| FY 95 | FY 02 | DC/AOC | Constitution Ave. – 2nd St., NE to 7th St., NW |
| | FY 98 | DC | Independence Ave. – 12th St. to 14th St., NW |
| | | | |
| | FY 95 | DC | 15th Street, NW – Const. Ave. to E St., NW |
| | FY 06 | NPS | Lincoln Circle Memorial |
| | | NPS | Phase IV Ellipse |
| FY 96 | FY 95 | DC/AOC | 1st Street, NE/SE – Const. Ave. to Indep. Ave. |
| | FY 95 | DC/AOC | Maryland Ave. – 1st St. to Indep. Ave. |
| | | | |
| | FY 98 | NPS | Jefferson Drive – 3rd St. to 15th St. |
| | FY 99 | NPS | East Basin Drive – Jefferson Memorial |
| FY 97 | FY 00, 07 | NPS | Independence Ave. – 15th St. to Lincoln Circle Memorial |
| | FY 01, 04 | NPS | Maine Ave./Swan Boat Area |
| FY 98 | FY 12 | NPS | Constitution Ave. – 15th St. to 23rd St. |

Notes: DC = District of Columbia ; NPS = National Park Service; AOC = Architect of the Capitol.

A6. Roadway Jurisdiction Map



AUGUST 1992

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